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BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 19 1941

PROTHROMBIN DEFICIENCY IN DISEASE OF THE LIVER AND BILE PASSAGES AND ITS TREATMENT WITH SYNTHETIC VITAMIN K

BY

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Prothrombin deficiency as a cause of haemorrhage in disease of the liver and bile passages has attracted attention in recent years and has resulted in an important therapeutic advance. A brief account of the development of this work may be given before reporting the results of the present investigation. Dam (1934) and Dam and Schönheyder (1934), while working on a problem of fat metabolism, noticed that chicks fed on a fat-free diet soon developed subcutaneous and intramuscular haemorrhages, which they showed were associated with a deficiency of prothrombin in the circulating blood. They observed that cure was obtained by adding green vegetables to the diet, but that it did not follow addition of the known accessory food factors. Thus a new dietary substance was demonstrated which had the power of increasing the amount of prothrombin in the blood when it was deficient. This new factor was found to be fat-soluble, and was named vitamin K by Dam after the initial letter in the Danish word "Koagulation." Quick and his colleagues (1935), working in America, observed prothrombin deficiency in the blood of patients suffering from severe obstructive jaundice. A link between these two observations was soon demonstrated by Butt *et al.* (1938), Brinkhous *et al.* (1938), and Dam and Glavind (1938) when it was shown that prothrombin deficiency and haemorrhage in obstructive jaundice could be prevented by administering ether extracts of alfalfa grass. This work was at once recognized to be of practical value in the surgery of obstructive jaundice, and was confirmed in America by Stewart and Rourke (1939) and in this country by Illingworth (1939a).

Studies on the constitution and properties of vitamin K were undertaken in Denmark and America. It was early recognized that a naphthoquinone group formed part of the molecule (MacCorquodale *et al.*, 1939); hence various naphthoquinone preparations were used in the treatment of prothrombin deficiency in obstructive jaundice. Of these preparations a water-soluble compound, phthiocol (2-methyl-3-hydroxy-1:4-naphthoquinone), given intravenously, was found to have some activity (Butt *et al.*, 1939), but was apparently not so potent as water-insoluble 2-methyl-1:4-naphthoquinone, injected intramuscularly or given by mouth in conjunction with bile salts (Almquist and Klose, 1939; Macfie, Bacharach, and Chance, 1939). After the active principle of the vitamin had been isolated and its constitution found to be 2-methyl-3-phytyl-1:4-naphthoquinone (Binkley *et al.*, 1939; Fieser, 1939), it was shown that 2-methyl-1:4-naphthoquinone was at least as potent as the vitamin itself (Ansbacher *et al.*, 1939).

Quantitative Estimation of Prothrombin in Blood

Prothrombin is considered to be a pro-enzyme associated with the globulin fraction of the plasma proteins. It is destroyed by heating blood to 60° C., and may be removed from plasma by adsorbing agents (Quick, 1940). It is believed to be formed by the liver, since the amount in the blood diminishes when the liver is severely damaged, as in acute cytolytic necrosis and in chloroform poisoning (Smith *et al.*, 1937), or when it is partially excised in dogs (Warner, 1938). The only known function of prothrombin is the formation of thrombin in the presence of calcium and thrombokinase, the latter being derived from platelets and tissue juice. Thrombin coagulates fibrinogen, forming fibrin. The velocity of this reaction bears a definite relation to the concentration of thrombin present: thus with small amounts of thrombin the coagulation time is prolonged; with large amounts it is shortened. Hence the time taken for the coagulation of a sample of blood in which adequate amounts of calcium, thrombokinase, and fibrinogen are known to be present will be an index of the amount of thrombin and so of the amount of prothrombin originally present. This coagulation time has been termed the "prothrombin time" (Quick, 1935), and is used as a criterion for the quantitative determination of prothrombin in blood. During the coagulation of blood two reactions are considered to occur, and may be represented thus: (1) prothrombin + calcium + thrombokinase → thrombin; (2) thrombin + fibrinogen → fibrin.

The prothrombin time includes both reactions, and objection may be raised that variations in the speed of the first reaction might vitiate the test as an index of the amount of prothrombin present, but in practice this has not caused any difficulty in my work. It is unnecessary to estimate the amount of fibrinogen in each sample of blood, since quantities insufficient for coagulation are seldom encountered.

Method of Determining the Prothrombin Time (Quick *et al.*, 1935, modified).—4.5 c.cm. of venous blood is taken

into a syringe containing 0.5 c.cm. of M/10 sodium oxalate. After centrifuging, 0.1 c.cm. of plasma is added to a 3 in. by 1/2 in. test-tube containing 0.1 c.cm. of lung extract* (used as the source of thrombokinase) and 0.1 c.cm. of M/10 calcium chloride solution (to neutralize the oxalate and leave a slight excess for the mechanism of coagulation). A stop-watch is started immediately on the

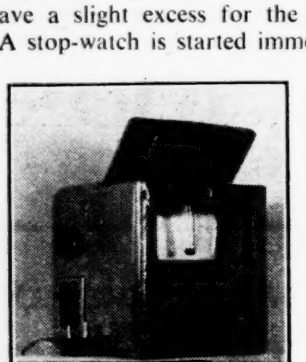

FIG. 1.—The coagulometer.

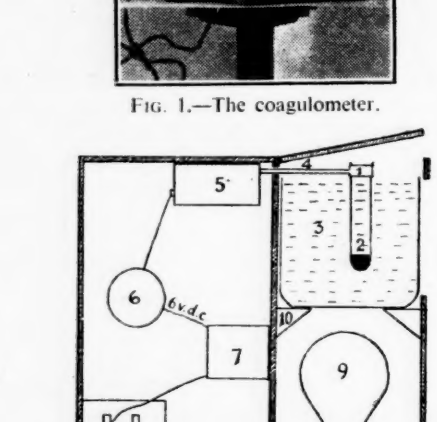

FIG. 2.—Diagram illustrating mechanism of coagulometer. 1: Spring clip. 2: 3 in. by 1/2 in. test-tube. 3: Water-bath. 4: Driving spindle. 5: Motor of "windscreen wiper." 6: Variable resistance for speed control. 7: Transformer and rectifier. 8: Switches. 9: Electric bulb as heat and light source. 10: Bracket to support water-bath. Thermostatic control was found to be unnecessary.

addition of plasma, and the tube, after being shaken gently for a few seconds, is transferred to a water-bath at 38° C. It is propelled in the water through an angle of 170 degrees by the apparatus shown in the photograph. This procedure ensures that the temperature and range of movement given to each sample are uniform, besides producing a sharp end-point. The watch is stopped when coagulation occurs. By this method the prothrombin time in healthy persons was found to average 25 seconds and to vary between 24 and 27 seconds. In jaundiced patients it varied between 25 and 140 seconds. Duplicate estimations were carried out, the average difference being 1 second. Because of slight variations in the lung extract, and in order to compare results obtained from day to day in the same patient and in different patients, the "prothrombin index" (Quick *et al.*, 1935) was determined as follows:

$$\text{Prothrombin index} = \frac{\text{Unknown prothrombin time in secs.}}{\text{Normal control prothrombin time in secs.}} \times 100$$

The normal range is 90 to 110. The results are expressed as a percentage of normal.

* Fresh ox-lung extract was used as a source of thrombokinase and was prepared by the method described by Smith *et al.* (1939). This extract lost much of its potency in two to three days if kept at room temperature. This period was extended to three to five days if stored at 9° C., but if immediately placed in the freezing chamber of the refrigerator it retained its activity at least four weeks after preparation. By this time the stock had usually been exhausted. The lung extract, in saline, was stored in fifty small glass tubes of about 1.5 c.cm. capacity, sealed, and immediately frozen. A tube was taken from the refrigerator before it was required to carry out a test.

Personal Observations

This paper describes an investigation of prothrombin deficiency and haemorrhage in obstructive jaundice, biliary fistula, catarrhal jaundice, and cirrhosis of the liver; and the treatment of prothrombin deficiency in some of the patients with a new water-soluble preparation. Finally the possibility of a liver function test based on prothrombin estimations is briefly discussed.

Thirty-five patients have been studied, and repeated determinations of the prothrombin index and quantitative van den Bergh reactions were made in all, and in addition the platelet count (Gram's method modified, Reid, 1940), the bleeding-time (Duke, 1915), the capillary resistance test (Göthlin, 1937), and the coagulation time (recalcifying oxalated blood, Quick *et al.*, 1935) were carried out in three patients with post-operative haemorrhage. In 16 cases definite prothrombin deficiency was found, and these were selected for treatment with synthetic naphthoquinone preparations in order that the efficiency of the drug could be determined. Of these patients 8 received 2-methyl-1:4-naphthoquinone† in peanut oil by intramuscular injection, and 8 were given the new 2-methyl-1:4-naphthohydroquinone disuccinate‡ by intravenous injection. Daily prothrombin estimations were carried out three to five days before and seven to ten days after treatment, and samples of blood were also taken four hours after giving the drug in order to determine how quickly it acted. For convenience of description the patients have been grouped as follows:

1(*a*) Obstructive Jaundice due to Neoplasm

Fifteen patients have been studied—seven males and seven females. The age range of the patients was 29 to 74 years, with the maximum age distribution about the sixty-fifth year. The duration of jaundice before investigations were carried out was two to twenty-two weeks, and the degree of jaundice varied between 11 and 32 mg. of bilirubin per 100 c.cm. plasma.

Before Operation.—The prothrombin index in patients before operation ranged from 31 to 100%, and averaged 65%. Slight prothrombin deficiency was occasionally found when the plasma bilirubin was below 20 mg./100 c.cm., but in most of these patients the prothrombin index was within normal limits. When the amount of bilirubin exceeded 25 mg./100 c.cm. plasma, prothrombin deficiency was always found, and was more pronounced the more the bilirubin in the blood increased above this level—i.e. the more complete the biliary obstruction became and the smaller the quantity of bile entering the intestine. The patients on whom these investigations were carried out were all taking satisfactory diets, including green vegetables, so the dietary intake of fat-soluble vitamin K might be assumed to be adequate. Further, it was found by the American workers and Illingworth that vitamin K concentrates and 2-methyl-1:4-naphthoquinone given by mouth had no effect on the low prothrombin levels in obstructive jaundice and biliary fistula unless bile salts were given by mouth at the same time. Hence the correlation between the degree of prothrombin deficiency and the lack of bile entering the intestine supports the view of the above workers that entry of insufficient bile salts into the intestine, with consequent deficient absorption of vitamin K, is the main cause of the fall in the prothrombin level in obstructive jaundice and biliary fistula.

After Operation.—Marked prothrombin deficiency was encountered in patients after operation, in association with

† 2-methyl-1:4-naphthoquinone supplied by Glaxo Laboratories Ltd. under the trade name kapilon.

‡ 2-methyl-1:4-naphthohydroquinone disuccinate supplied by Roche Products Ltd.

much slighter degrees of obstructive jaundice (e.g., 10 mg. bilirubin per 100 c.cm. plasma). This always occurred, whether it was an exploratory laparotomy or an operation to relieve biliary obstruction. In seven such patients a pronounced prothrombin deficiency developed from the second to the sixth day, the prothrombin index being reduced from 5 to 25% in the first twenty-four hours and from 20 to 50% between the second and the sixth day. (These figures tend to under-estimate the actual results, since treatment was not long delayed after the prothrombin index fell below 50%.) Four possible factors which might account for this considerable post-operative fall require consideration: (1) utilization of prothrombin for coagulation of blood during and immediately after operation; (2) a toxic effect of the anaesthetic on the liver; (3) lack of vitamin K, due to defective absorption from the intestine; (4) deficiency of the vitamin in the post-operative diet.

The first of the above factors was shown to be unimportant, because equally low figures were obtained just before and one to three hours after operation. With regard to the second factor, the seven patients showing the marked post-operative fall responded immediately to treatment with naphthoquinone preparations and the prothrombin index rapidly returned to normal; hence liver damage, while it may be a contributory factor, does not appear to play an important part in producing post-operative deficiency. The third factor—interference with the absorption of vitamin K through the absence of bile salts from the intestine—has just been discussed as a cause of prothrombin deficiency. Four of the seven patients referred to above underwent anastomotic operation for the relief of biliary obstruction. The stools were fairly well coloured before operation, but were even darker on the second and third days afterwards. The maximum fall in the prothrombin index occurred on an average on the fourth day, so that if bile salts were being excreted along with the pigment failure of absorption of vitamin K would not be due to this cause. The fourth factor, deficiency of vitamin K in the post-operative diet—so far as it may be assessed at present—was found to exist, since green vegetables (the only known source rich in the vitamin) were not taken for at least one week.

It would therefore appear that a deficient intake of vitamin K may be important in causing the pronounced post-operative fall in the prothrombin index, but a definite statement on the question must await further investigation.

1(*b*). Non-malignant Obstructive Jaundice

Eight patients, 7 females and 1 male, have been studied. Their ages ranged from 38 to 75 years. Six had chronic cholecystitis with gall-stones, 1 had a post-operative stricture of the common bile duct, and 1 had chronic pancreatitis. All were jaundiced, but not deeply (3 to 7 mg. bilirubin/100 c.cm. plasma), when observations were made.

Before operation the prothrombin index was never below 75%; in 7 it ranged between 80% and 95%. Six patients underwent operation: 4 for removal of gall-stones, 1 for stricture of the common bile duct, and 1 had an exploratory laparotomy. In 4 the prothrombin index ranged between 75% and 80% in the first two days after operation, but thereafter normal values were found. In another patient it fell to 57% on the fourth day, and in the sixth patient it fell to 25% after one week, when haemorrhage from the wound was observed.

Prothrombin deficiency was considered to be due to the causes discussed in dealing with the malignant obstructive jaundice group.

2. Biliary Fistula

There were two patients in this group; their cases are here recorded.

Case 1.—A married woman aged 59 had a cholecystectomy performed for chronic cholecystitis with gall-stones. A complete biliary fistula developed after this operation. Her diet was satisfactory, but the prothrombin index was only 52% after the fistula had been present for ten weeks. On the day following an operation to close the fistula it fell to 36%; 15 mg. of the intravenous preparation was given, and within twenty-four hours the prothrombin index had risen to 88%.

Case 2.—A married woman aged 52 developed a biliary fistula following cholecystectomy for chronic cholecystitis. A repair operation four months after removal of the gall-bladder failed, and a fistula developed, associated with slight obstructive jaundice (immediate direct van den Bergh and 5 mg. bilirubin/100 c.cm. plasma). The stools were light in colour and bile was present in the urine. The prothrombin index was 80% after the condition had been present for eight months, and showed little variation over a period of three weeks. Two days after intramuscular injection of 15 mg. of 2-methyl-1:4-naphthoquinone the prothrombin index was 103%. A second repair operation was successfully undertaken, further treatment having been given the previous day. Despite the fact that the patient was unable to take anything but fluids for the week following operation the prothrombin index never fell below 90%.

No haemorrhage occurred in either of these patients. In the first a biliary fistula prevented sufficient bile salts entering the intestine, with the result that adequate amounts of vitamin K, though present in the diet, were not absorbed, hence the low prothrombin values. The second had a partial fistula and slight obstructive jaundice, but enough bile salts entered the intestine to prevent serious prothrombin deficiency developing. Pre-operative treatment prevented the usual fall in the prothrombin index after operation.

3. Catarrhal Jaundice

Six patients with catarrhal jaundice were subjects of investigation. There were 3 males and 3 females, and the ages ranged from 19 to 30 years. Two suffered from a mild, 3 from a moderate, and 1 from a severe attack of the disease. The prothrombin index was never below 90% and the plasma bilirubin was 5 and 10 mg. per 100 c.cm. respectively in the 2 patients with the mild form of the disease. In the patients with the moderate attack the lowest prothrombin indices were 80%, 72%, and 65%, and the plasma bilirubin was 18, 9, and 7 mg./100 c.cm. respectively. The prothrombin index was 20% and the plasma bilirubin 35 mg./100 c.cm. at the height of the disease in the patient with severe clinical manifestations. He also had extensive subcutaneous haemorrhages and haematomata on the arms, legs, and abdomen, though external haemorrhage did not occur. His diet was good and the rapid improvement in the prothrombin index (20% to 90% in three days) without extraneous vitamin K therapy coincided with the appearance of bile in the stools, though the plasma bilirubin was still 32 mg./100 c.cm.

The prothrombin deficiency in patients with slight jaundice may be due to a toxic effect on the liver, since they were taking a satisfactory diet and bile was known to be entering the intestine. In the patient with marked prothrombin deficiency failure to absorb vitamin K appeared also to be important, since the prothrombin index rose rapidly after the stools were coloured.

4. Cirrhosis of Liver

Investigations were carried out on 4 patients—2 males and 2 females. Their ages ranged from 46 to 65 years. Slight icterus (2 to 4 mg. bilirubin/100 c.cm. plasma) was present in 3, and the stools were well coloured in all 4. The amount of prothrombin in the blood was always moderately reduced, and the prothrombin index ranged from 65% to 80%. On an ordinary mixed diet the level tended to fluctuate between these figures over a period of 3 to 6 weeks. Normal values were never reached, and there was practically no response to parenteral administration of the vitamin K preparation (see Fig. 4).

Post-operative Haemorrhage

Three patients with obstructive jaundice developed post-operative haemorrhage from their wounds. There was no bleeding into the skin or from mucous membranes. A brief clinical outline of their conditions will be given.

Case 3.—A man aged 27 complained of abdominal pain and vomiting after food for ten weeks, and jaundice for two weeks. He was poorly nourished and a mass was palpable in the epigastrium. The stools were light in colour and the urine contained bile. The plasma gave an immediate direct van den Bergh reaction, with 11.5 mg. bilirubin/100 c.cm. On the day before an exploratory laparotomy the prothrombin index was 76%. At operation an inoperable retroperitoneal sarcoma was found, and the wound was carefully closed. Throughout the day after operation he suffered from marked abdominal discomfort and vomiting, resulting in restlessness. In the evening of the same day it was noticed that his dressing was blood-stained and that a general ooze was coming from the wound. After changing the dressing the haemorrhage stopped until the afternoon of the second day, when the prothrombin index was 50%. The platelet count, the bleeding-time, and the capillary resistance test were normal. The coagulation time was slightly prolonged. Ten mg. of 2-methyl-1:4-naphthoquinone was given intramuscularly, and twenty-four hours later, though he was still restless and vomiting, the haemorrhage had stopped and the prothrombin index was 94%. He died on the fourth day after operation. A post-mortem examination was not carried out.

Restlessness, retching, and vomiting, by putting an extra strain on the wound, was probably the main factor in causing the early onset of haemorrhage, and the fact that it was intermittent is probably a reflection on the slight prolongation of the coagulation time.

Case 4.—A man aged 67 complained of jaundice of three days' duration. He was well nourished and took his food well. The stools were brown in colour and the urine contained bile. The plasma gave an immediate direct van den Bergh reaction and contained 8.5 mg. bilirubin/100 c.cm. Before operation the prothrombin index was normal (90 to 96%). A cholecystoduodenostomy was performed for a carcinoma of the head of the pancreas, and twenty-four hours after operation the prothrombin index was 75%. It gradually fell until the fifth day, when it was 55%, and the coagulation time was moderately prolonged. The platelet count, the bleeding-time, and the capillary resistance test were normal. On the evening of this day haemorrhage from the wound was noticed, and later his extremities were cold and he became collapsed. Haemorrhage was more or less continuous for forty-eight hours. The haematocrit reading before the haemorrhage was 40%; afterwards it was 32%, so that probably at least one-fifth of the red cells were lost. The response to treatment is shown in Fig. 3. Satisfactory progress was made until the tenth day; then he became drowsy and dehydrated, and died on the fifteenth day after operation. A post-mortem examination was not performed.

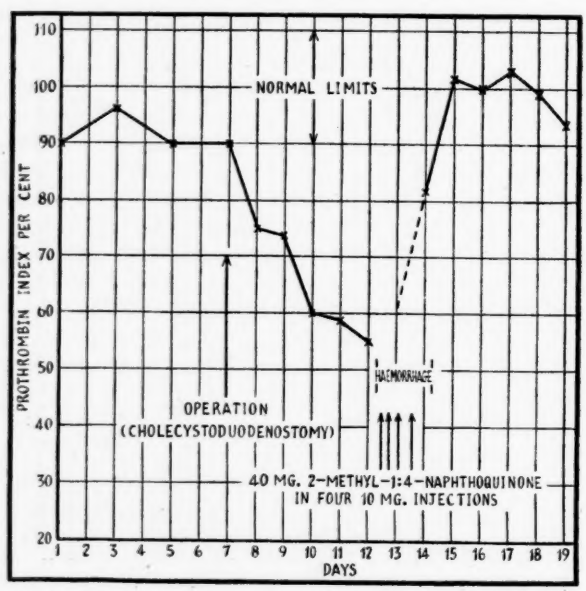

FIG. 3.—Showing the onset of haemorrhage after the post-operative fall in the blood prothrombin and the immediate response to treatment with synthetic vitamin K.

Case 5.—A woman aged 46 complained of intermittent attacks of pain in the right hypochondrium, shivering, and jaundice for the past twelve years. Bile was present in the urine, but the stools were well coloured. The van den Bergh test gave an immediate direct reaction of 6 mg. bilirubin/100 c.cm. plasma. A diagnosis of chronic cholecystitis with obstructive jaundice due to gall-stones was made. A hypochromic anaemia was also present (Hb, 52%; R.B.C., 3,470,000/c.mm.; C.I., 0.73; haematocrit, 30%; W.B.C., 7,200/c.mm.), which was treated successfully with iron. Before operation the prothrombin index was 75%; the platelet count, the bleeding-time, the capillary resistance test, and the coagulation time were normal. A stone was removed from the common bile duct and the gall-bladder was drained. Late in the evening of the sixth day after operation a slow ooze from the wound was first noticed; this continued overnight, and by 10.15 the next morning the patient's extremities were cold and she was collapsed. The prothrombin index was 25% and the coagulation time was much prolonged. The bleeding-time and capillary resistance test were normal. At 10.30 a.m. she was given 15 mg. of 2-methyl-1:4-naphthoquinone intramuscularly, and four hours later the prothrombin index was 75%, the coagulation time was normal, and the haemorrhage had ceased. On the eighth day the prothrombin index was 94%. The subsequent course was uneventful.

Haemorrhage and Prothrombin Deficiency

Haemorrhage associated with prothrombin deficiency has been described in newborn infants, in idiopathic steatorrhoea (Kark *et al.*, 1940), and in hepatic and biliary disease. It may be manifested by ecchymoses, haematomata, and haemorrhage from mucous membranes and even into joints, but it occurs most often from operation wounds (Illingworth, 1939b).

When haemorrhage began in the three cases just described the prothrombin index was 50%, 55%, and 25% respectively. Three patients with obstructive jaundice and one with a biliary fistula showed prothrombin indices of 24%, 26%, 27%, and 36% after operation and yet no haemorrhage occurred. It would therefore appear that there is no constant relation between the degree of prothrombin deficiency and the occurrence of haemorrhage from the operation wound. This statement may be explained by considering that before any serious capillary haemorrhage can occur two conditions must be fulfilled: (1) rupture of the vessels; and (2) an upset in the mechanism for securing haemostasis. Prothrombin deficiency, by interfering with the coagulation of blood (a process of importance in stopping haemorrhage), will thus not necessarily result in haemorrhage, but if rupture of the vessels occurs this interference with the coagulation mechanism will prolong the bleeding. Trauma is suggested as the most frequent cause of rupture of the vessels, since no defect in the capillaries was found, as judged by the capillary resistance test. This is supported by the frequency of haemorrhage from the operation wound, which is a "weak spot" and so more liable to bleed from minor injury.

A Comparison of Haemorrhage in Jaundice and Haemophilia

Four patients with haemophilia were studied. The platelet count, the bleeding-time, the capillary resistance test, and the prothrombin index were normal and the coagulation time was prolonged (4 to 8 times normal).

In the three patients with obstructive jaundice who developed haemorrhage the platelet count, the bleeding-

time, and the capillary fragility test were normal. The prothrombin index was subnormal and the coagulation time was prolonged in proportion to the degree of prothrombin deficiency—e.g., it was four times normal when the prothrombin index was 25%.

It is suggested, from these observations and the clinical manifestations of haemorrhage in the two conditions, that there is a close analogy between haemophilia and haemorrhage in jaundice. A defect in the coagulation of blood exists in both and trauma is the usual determining cause of haemorrhage. The essential difference between the conditions rests in the particular upset in the coagulation mechanism—in the one a prothrombin deficiency and in the other an unknown congenital defect.

Treatment of Prothrombin Deficiency

The object of treatment is to raise the prothrombin index to the normal level of 90% to 110% in order to correct the defect in the coagulation of the blood. The results are shown in the accompanying table. All the

Table showing Effect of Treatment on the Prothrombin Index

Condition	Preparation and Dose		No. of Cases	Prothrombin Index: Before Therapy	Prothrombin Index: 4 Hours after Therapy	Prothrombin Index: Time to Reach Normal (Days)
Obstructive jaundice due to neoplasm	I.M.	10 mg.	6	27–64	}*	3
	I.V.	10 mg.	6	24–58		2
Non-malignant obstructive jaundice	I.M.	10 mg.	1	57		1
	I.V.	15 mg.	1	25	75	1
Biliary fistula	I.M.	15 mg.	1	88	—	2
	I.V.	15 mg.	1	36	62	1
Cirrhosis of liver	I.M.	10 mg.	2	60 & 71	62 & 70	No significant change after 7 days
	I.V.	10 mg.	2	70 & 80	71 & 82	

I.M. = Intramuscular. I.V. = Intravenous.

* Six patients had prothrombin indices under 40% before treatment. In three of them an increase of 15 to 30% was observed four hours after giving the intramuscular preparation, and in the others an increase of 25 to 50% four hours after the intravenous preparation.

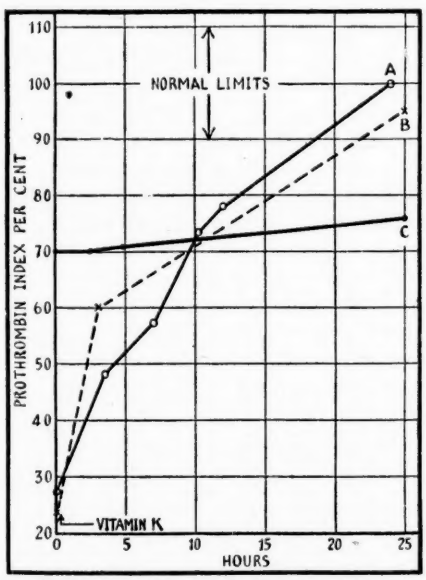

FIG. 4.—Illustrating the rapid improvement in the prothrombin index, after synthetic vitamin K, in two patients with obstructive jaundice due to carcinoma of the head of the pancreas and the insignificant response in a patient with cirrhosis of the liver. A = Carcinoma of head of pancreas: 10 mg. vitamin K intramuscularly. B = Carcinoma of head of pancreas: 10 mg. vitamin K intravenously. C = Cirrhosis of liver: 10 mg. vitamin K intravenously.

patients except those with cirrhosis of the liver responded to treatment (Fig. 4). The marked activity of 2-methyl-1:4-naphthoquinone in increasing the amount of prothrombin in the blood has been confirmed, and it may be concluded that the new intravenous preparation is at least as potent as this drug. The intravenous drug appears to be more rapid in its action than the intramuscular one, but for a prolonged action the latter is probably to be preferred. Definite conclusions on the dosage and the time for the maximum response could not be made, but the results suggest that a more rapid increase in the prothrombin index occurs when the larger doses are given. No toxic effects were encountered with either of these preparations, but two patients complained of pain at the site of intramuscular injection.

In preparing a jaundiced patient for operation prothrombin estimations will decide whether treatment is necessary or not. If these estimations are not carried out during the first week after operation it would seem advisable to administer some active form of vitamin K as a routine in view of the marked fall in the amount of prothrombin which may occur during this dangerous period. For this purpose a depot dose of 15 to 20 mg. of 2-methyl-1:4-naphthoquinone intramuscularly on the day of operation is suggested.

Blood Prothrombin Levels and Liver Efficiency

Suggestions have been made that the amount of prothrombin in the blood may be used to assess liver function, and recently Wilson (1940) has reported a relation between the hippuric acid liver-function test and blood-prothrombin levels. The failure of the patients with cirrhosis of the liver to respond to treatment (see table) may be ascribed to liver inefficiency, since, as previously mentioned, the only known conditions affecting man in which prothrombin deficiency does not respond to vitamin K therapy are associated with severe liver damage. Similar results have been reported by Butt *et al.* (1940) in three patients with cirrhosis.

Laevulose-tolerance tests carried out on three of the four patients in whom the above investigations suggested liver inefficiency were normal. Later two of these patients died, and post-mortem examination revealed advanced cirrhotic changes. Thus it may be that the failure of naphthoquinone preparations to increase the subnormal amounts of prothrombin in the blood in patients suffering from chronic hepatic disease such as cirrhosis may prove to be a valuable index of liver inefficiency. This matter is being investigated, and it is intended to make it the basis of a subsequent communication.

Summary

The importance of vitamin K in the prevention and treatment of haemorrhage in hepatic and biliary diseases associated with jaundice has now been fully recognized. The present investigations support previous work indicating that defective absorption of vitamin K due to absence of bile salts in the intestine is chiefly responsible for prothrombin deficiency in obstructive jaundice and biliary fistula prior to operation.

It is suggested that prothrombin deficiency after operation in these conditions—a deficiency which is often pronounced—may be due to a deficient intake of vitamin K in the restricted post-operative diet. Routine pre-operative administration of vitamin K is recommended.

The prothrombin deficiency in cirrhosis of the liver is considered to result from imperfect utilization of vitamin K by the liver.

Prothrombin deficiency is not, even when severe, always associated with haemorrhage. It is considered to be responsible only for the prolongation of haemorrhage after it has been caused by other factors, especially injury.

A new water-soluble preparation (2-methyl-1:4-naphthohydroquinone disuccinate), injected intravenously, has been found

to be as efficient as 2-methyl-1:4-naphthoquinone in increasing the amount of prothrombin in the blood when there is a deficiency. Moreover, the action of this preparation appears to be more rapid though less sustained than the latter. It has one minor disadvantage in that it is not stable for long in aqueous solution, and so has to be dissolved in water immediately before use.

A close analogy between haemorrhage in jaundice and haemophilia has been made. In both an upset in the coagulation mechanism exists, which is due in the one to prothrombin deficiency and in the other to an unknown congenital defect.

The failure of the patients with cirrhosis of the liver to respond to naphthoquinone preparations suggests that prothrombin estimations may form the basis of an additional test of hepatic insufficiency. This possibility is being explored.

A simple apparatus for determining the coagulation time and prothrombin time has been illustrated and a method of preserving lung extract, used as a source of thrombokinase, has been described.

I wish to thank Profs. J. W. McNee and C. F. W. Illingworth for advice and criticism, the physicians and surgeons of the Western Infirmary for permission to examine and treat the patients under their care, and Glaxo Laboratories Ltd. and Roche Products Ltd. for supplies of vitamin K.

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The committee of the Royal Melbourne Hospital has accepted responsibility for the erection of a new building for the Walter and Eliza Institute of Research in Pathology and Medicine, now in its twenty-first year. The building will provide additional laboratory space and greatly improved facilities. Meanwhile the annual report of the Institute chronicles a large amount of work, some of it routine investigation and some of it called for by the special demands of the war, in the virus department, the biochemical department, and the departments of clinical and neuropathological research. Much of the work has already been published in Australian journals. Last year the Institute started a blood bank, the only one so far established in Melbourne, to meet emergency blood transfusion requirements. A considerable part of the Institute's work has been the determination of the blood groups of nearly 13,000 troops of the A.I.F. in camp in Victoria. Research has also been undertaken on changes observed during storage of blood, and on the treatment of anuria following incompatible blood transfusions. Endeavours have been made to find a solution which, when injected intravenously in small amounts, will cause rapid alkalinization of the urine. A dose of 20 c.cm. molar sodium lactate solution shifts the *p*H of urine to the alkaline side and maintains it there for half an hour, and it is thought that it may be possible to produce more significant effects with larger doses or more concentrated solutions.

EXPERIENCES IN THE RECEPTION AND TREATMENT OF AIR-RAID CASUALTIES

BY

JOHN ROBERT LEE, M.D., B.S., F.R.C.S.

These notes cover a period of two months when intensive enemy air raids occurred over London. During this period 227 patients came under my care and supervision. Many of us have seen and treated badly injured civilians brought to hospital as the result of road, railway, or works accidents in peacetime. It seems to me, however, that only those who have had to deal with victims of air raids can conceive the appalling condition and appearance of many of these patients on their arrival in hospital. A sight which must be seen to be appreciated fully is the almost indescribably filthy condition of many who evidently had been clean and well clad. A patient is brought to the receiving ward with her clothes cut and torn to shreds, her hair singed, filled with dirt, and matted with blood and cement dust, her body and limbs covered with grit and oil, her face blackened, bruised, and bleeding, her eyes, nose, lips, and ears filled with dirt, her head bandaged, and her limbs immobilized by improvised splints at the first-aid post. Truly it is a picture not easy to forget. Most badly injured patients had been given 1/4 grain to 1/2 grain of morphine; the latter seemed too big a dose. Their ages varied from an infant a few hours old, born and bombed on the same day, to a man aged 92. There were twelve children under 14 years and twenty-six patients over 70. Thirty-six patients were dead or moribund on arrival in the receiving-room. The other patients were classified as follows:

Group 1 consisted of those so terribly injured that they died within an hour of arrival.

Group 2 patients were a few so badly hurt and shocked that they died notwithstanding most prompt measures taken for their resuscitation. Two of these were in so much pain that morphine and other usual sedatives failed to relieve. The administration of repeated short inhalations of chloroform was found to be the only way to calm these patients and to relieve their agony.

Group 3 was made up of those suffering from severe shock and loss of blood. These responded to blood transfusion, other resuscitation measures, and good nursing. After some hours—up to twenty-four—they were in a fit condition to be operated on, and made a good recovery. Some in this group had shattered limbs or had lost part of a limb. Others had head injuries with open or closed fracture of the skull. Three had protrusion of brain substance. All three recovered. Four patients had fractured spine. Two had penetrating abdominal wounds. Others suffered from severe burns.

Group 4 included patients less severely injured. They had large lacerated wounds or open or closed fractures, but shock was not so marked.

Group 5 comprised patients suffering with multiple small cuts, abrasions, and bruises.

Our Routine

Faced for the first time with conditions as described, we evolved and adopted the following routine plan. The patient was at once assured he would be safe and well cared for; those who were distressed because they could not see owing to dirt, swelling, or eye injury were told not to fear going blind. Their eyes were thoroughly cleansed and castor-oil instilled at once, and their lips and mouths were also cleaned. The patients then had a

cup of fresh tea with sugar. Antitetanic serum was given to all the wounded. Brief notes were written and any such treatment was recorded on the case sheet, especially if morphine had been administered at the first-aid post. The patient was then sent to the ward. The nursing staff carried out their duties efficiently, often working on far into the night after a long day. Patients well enough were removed from the stretchers and put to bed. Several of those in one of the first three groups were too ill to be moved off the stretchers for some hours. As soon as such a patient arrived in the ward all special measures for resuscitation were begun, and carried out, by the hospital staff and by special teams, whose skill and untiring efforts saved many lives and enabled us to operate and to obtain good results.

Three patients who were very ill and had been given several pints of blood responded very well indeed; then after a few hours they suddenly showed pronounced signs of apparent collapse, with profuse cold clammy sweat, dilated pupils, rapid very feeble pulse, and restlessness. A hypodermic injection was given consisting of morphine grain 1/4, strychnine grain 1/60, and atropine grain 1/100—the tablet known as M.S.A.—with a good result in each case.

All wounded patients were given the full prescribed course of sulphapyridine with the usual routine hygienic and dietetic measures, combined with good nursing. We soon evolved the following method in cases of injuries to the head or limbs with extensive lacerated wounds.

Patients when well enough to be operated on were given preliminary medication, including 1/100 grain of atropine, and taken to the theatre still on the stretchers on which they were admitted. A general or more often an intravenous anaesthetic was administered: then what we termed a "cleansing squad," which included a doctor, sister, nurse, and one or two attendants, removed the patient's clothes, and thoroughly cleansed the injured parts with ether soap and hot water over a large flat dish and mackintosh. In wounds of the head the hair was cut away. The area adjacent to the wound on the scalp or a limb was shaved, washed with a solution of dettol, and placed in a suitable position on sterile towels. The surgeons were then able to operate with reasonable aseptic and antiseptic care. The area adjacent to the wound was painted with dilute tincture of iodine. Wounds were carefully examined and explored, and foreign bodies and debris were removed. Skin edges and other damaged tissues, especially devitalized muscle, were excised. In a few cases sulphanilamide powder was freely placed in the wound, which was then closed by sutures somewhat widely placed and without tension. Rubber tubing or other material was not used for drainage. Suitable dressings were applied and, if necessary, as in a bad wound of a limb, local rest was obtained by the use of a splint for a few days. We found it a good plan in some cases when a patient had multiple wounds, say of head and a limb or two limbs, for two surgeons to operate on the patient, each doing one part, and so lessening the time the patient was under the anaesthetic. The results were gratifying.

Use of Glycerin and Iodine

From experience gained from dealing with those injured in railway and road accidents during recent years, I treated nearly all wounds by using glycerin and iodine instead of sulphanilamide. Our records show uniformly good results. We proved the value of the method in this series. It must be obvious that many wounds cannot be thoroughly excised. Three cases serve to illustrate this point very well.

A young man had a three-inch curved wound along the lower margin of his left orbit which extended deeply into the antrum. The skin was excised, and debris and small foreign bodies and fragments of loose bone were curetted out by using gauze on an artery forceps. The cavity was filled with glycerin and iodine and the wound was closed with a subcuticular suture. After suture the wound was painted freely with the solution. No dressings were applied. The wound healed without any complication. The patient was transferred to a base hospital, and returned to us for discharge within fourteen days of the injury.

Another case was that of a middle-aged woman who had a four-inch oblique wound which extended from near her right external orbital process, with a fracture of the upper jaw, through the zygoma into the pterygoid fossa. Exactly similar treatment was given with an equally good result.

A third patient, a girl aged 15, apparently had a large glass tumbler blown through her left shoulder. Nearly all of the body of the scapula, its neck, glenoid cavity, acromion, and coracoid, the outer third of the left clavicle, and the head and upper three inches of the left humerus were blown away. Her left upper limb was attached to her body by its vessels, nerves, and a band of skin about two inches wide. Her condition was desperate. The huge wounds in front of and behind what was her shoulder were filled freely with glycerin and iodine while resuscitation measures were being carried out. After thirty-six hours she was taken to the theatre and attended to as described herein. Portions of her coat and other clothes, with dirt and debris, were removed from the wounds, then more glycerin-and-iodine solution was constantly applied. Gas gangrene was feared, as cultures showed the presence of *B. welchii*. A dose of anti-gas-gangrene serum was given. She did not develop gas gangrene. At the end of five weeks she was able to move her elbow, forearm, wrist, thumb, and fingers well. The wounds were almost healed, and her general condition was good.

Many patients had literally scores of wounds on the face, body, hands, and legs. Excision was out of the question. These were treated by having the wounds curetted with gauze soaked in glycerin and iodine. On the face no dressings were used. The wounds were frequently painted. The small scabs were shed in about a week. Multiple wounds of the limbs were painted, and a sterile towel was placed so as to prevent contact with the bedclothes. All such wounds healed in less than a fortnight with very little scarring. By this method healing takes place rapidly under a scab with little or no pus, usually in less than a fortnight. There are no repeated painful dressings. The growing tissues are not damaged. The circulation and local nervous mechanism are not interfered with by bandages or other material placed around a limb. Every effort was made to avoid amputation, usually with satisfactory result.

Treatment of Burns

Before the more recent instructions were issued concerning the treatment of burns with tannic acid, two patients, a man and his wife, had severe burns of the face, forearms, and hands. Tannic acid had been applied. We noticed the hard claw-like fingers beginning to develop. The patients complained of much pain in the finger-tips. Hence I treated the cases with zinc oxide cream, which was very freely applied. The patients said the pain ceased after two hours. The black eschars softened and then peeled off, and both patients made an uninterrupted recovery, now having full use of their hands.

Conclusion

On three occasions when we had many severe casualties a mobile team was sent to help us. We found that, while their help was valuable, the disadvantages were that they did not know the run of the hospital, and that the theatre staffs had not worked with them; hence there were difficulties and delays. We were badly bombed on three occasions, and so our telephone service was cut off just when we needed it most. From this cause difficulties of arranging transport and transfers to base hospitals arose. We found it best to keep Group 3 patients under our own

care and treatment. None of these developed gas gangrene or serious sepsis.

The courage and cheerfulness of the patients were most remarkable. For example, one woman about 52 years of age, when asked how she was, said: "Oh, I've only a few cuts and scratches"; and added, "Hitler can't get me; he bombed me once before and blew the roof off my house. I was downstairs this time. My house is now down flat, and I won't be there next time he bombs it." Visitors were allowed freely, but were warned that there were to be "no tears" while in the wards.

I wish to express my thanks to the medical superintendent and his staff, and to the nursing staff, stretcher-bearers, and scouts, for their constant help and real team spirit in great emergencies.

RENAL COMPLICATIONS OF SULPHAPYRIDINE

ACCOUNT OF A CASE WHICH SHOWED GROSS HAEMATURIA AND URAEMIA

BY

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Although haematuria is generally recognized as an occasional complication of sulphapyridine treatment it is a condition which has received little attention in the literature of this country. All the information that I have been able to glean has been culled from communications published in the United States and in Canada, and from a summary of part of this transatlantic work by R. St. A. Heathcote (1940). The object of this paper is to report a case in which haematuria and uraemia occurred, and to give a general description of the renal complications of sulphapyridine (Backhouse, 1939).

Case Report

A second lieutenant aged 26 was admitted to hospital on August 26, 1940, with follicular tonsillitis. He gave a recent history of three similar attacks. There was no elevation of pulse or temperature. He was put on to sulphapyridine and given gargles of potassium chlorate. The following day he felt better and his throat was less painful. On August 28 he vomited several times and passed 10 oz. of deeply blood-stained urine. The sulphapyridine, of which he had received a total dose of 12 grammes, was stopped. He passed 1 oz. of urine during that night, and in the early morning of the 29th had a severe attack of pain in the lower abdomen, which radiated later to the penis. During the day he passed only 5 oz. of urine, which was grossly blood-stained. He continued to vomit throughout the day, and still complained of pain in the abdomen and across the lumbar region. In the evening he was very drowsy.

On August 31 an intravenous "drip" saline was started, as he was vomiting intermittently and had passed no urine for forty-eight hours. At this time his tongue was dry and furred, and occasional hiccups had begun to add to his distress. He was tender in the left iliac fossa and left costo-vertebral angle, and slightly tender in the right iliac fossa. There was no evidence of oedema. A blood count showed Hb 90%; R.B.C. 5,500,000; W.B.C. 11,250—78% polymorphs, 15% lymphocytes, 7% monocytes. During the night he became restless and delirious. The "drip" was stopped on the morning of September 1, by which time he had received 4 pints of normal saline and 2 pints of 5% glucose in normal saline. At the end of the drip his mental outlook was rational and his tongue had become moist. He was still vomiting, but less copiously and less often, and had not yet passed urine. During the afternoon another intravenous "drip" was started, 1 pint of normal saline being followed by 2 pints of 5% glucose-saline, and the same evening he passed about 1/2 oz. of bloody urine after a period of anuria lasting seventy-two hours. The specimen of urine was examined by Major C. E. van Rooyen, who reported as follows: "Specimen consists of about 1/2 oz. of blood-stained urine—cloudy, dark, and with much amorphous granular sediment. Microscopical examination: Numerous R.B.C. and pus cells; no bacteria; no crystals of any sort visible." This urine was passed at 8.30 p.m. At 9 p.m. a solution of 4.28% sodium sulphate was substituted for the glucose-saline, and at 9.45 p.m. a further 6 oz. of urine was passed. By the following morning the patient had passed 82 oz. of urine. The "drip" was continued till the morning of September 3, by which time 8 pints of saline and glucose and 2 pints of sodium sulphate solution had been given. From now on his condition rapidly improved and gave rise to no further anxiety. On September 11 a centrifuged deposit of urine showed W.B.C. (average 20 per field), R.B.C. (average 6 per field), 4 epithelial casts, and 1 hyaline cast.

On September 17 an excretory pyelogram revealed no abnormality of outline or function. Tonsillectomy was performed by Major E. A. M. Connal on September 23, and the patient was discharged from hospital on October 4.

Incidence of Renal Complications

Plummer and Ensworth (1939) reported 4 cases of gross haematuria and 1 of microscopical haematuria in 323 patients treated with sulphapyridine. They also observed a mild degree of blood nitrogen retention in 3 patients who showed no haematuria. These authors maintain that in their experience of the toxic effects of sulphapyridine "those involving the kidneys and ureters have been the most disturbing." Duncan Graham of Toronto and his co-workers (1939) observed 4 cases of gross haematuria in 50 patients, Smith and Needles (1939) 1 case among 50; while Tsao, McCracken, Chen, Kuo, and Dale (1939) have reported 5 cases of gross haematuria in a series of 40 patients, but attribute this high incidence to the poor nutrition, dehydration, and avitaminosis which were features of most of their patients. Tsao's patients were children attending a hospital which admits only sick refugee Chinese. In the case of almost all the patients in these various series pneumonia had been the primary disease for which the sulphapyridine was given. My colleague Captain J. A. Scott (personal communication) has noted a case of gross haematuria among 74 patients treated with sulphapyridine for gonorrhoea.

We know from the work of Antopol and Robinson (1939) and of Gross, Cooper, and Lewis (1939) that urinary calculi composed of acetyl-sulphapyridine (64.1%) and sulphapyridine (6.4%) can be produced experimentally in monkeys, rabbits, and rats by the oral administration of large amounts of the drug; and two small stones of acetyl-sulphapyridine were found by Plummer and Ensworth at necropsy in the kidney of a woman who over a period of three months had received 540 grammes of sulphapyridine on account of a subacute bacterial endocarditis. It is important to bear in mind, however, that massive doses of the drug are not essential to effect its precipitation in the urinary tract. Plummer and McLellan (1940) found the crystals in the bladder of a man aged 46 who developed pain in the left flank and haematuria after 11 grammes, and in the case described above only 12 grammes had been given. Nor does this precipitation depend upon a high level of the blood sulphapyridine. In fact, in Plummer and McLellan's case the level was too low to be read.

Nature of the Renal Lesion

In their experimental animals Antopol and Robinson found changes ranging from a simple calculous pyelitis and ureteritis to a marked pyelonephritis. Tsao has reported the post-mortem appearances in a boy aged 8 who had died of uraemia after receiving 7.78 grammes of

sulphapyridine. The pelves and ureters were dilated and their mucosae thickened, congested, and haemorrhagic; the bladder contained a small amount of grey sandy particles, and both ureters were blocked by concretions at their entrance into the bladder. Unfortunately the sand-like material was lost in the fluids and could not therefore be examined for sulphapyridine. Stryker (1940) had the opportunity of examining at necropsy the renal lesion in a child of 5 months who had died of pneumococcal meningitis and had developed gross haematuria after 44.2 grammes of sulphapyridine, administered over a period of four weeks. In this case the mucosa of the urinary tract appeared normal. In the calices and pelves of both kidneys a small amount of yellowish-white gravel was found, and four calculi were isolated from the pelvis of the right kidney. Here, as in Tsao's case, there was an accumulation of gravel in both ureters, mostly at the entrance of the ureters into the bladder. Microscopically the kidneys showed dilatation of the cortical tubules and glomerular spaces due to precipitation within the tubules of concretions of varying structure—namely, sharp-edged basophilic crystals, amorphous basophilic debris, and discoid bodies of homogeneous material.

Diagnosis

When haematuria is observed in a patient to whom sulphapyridine is being administered it must always be borne in mind that the drug may be responsible, and the urine should be examined for crystals. The crystals are elongated and sharp, and occur in clusters grouped at one end and radiating at the other. They are well shown in a photograph reproduced in Plummer and McLellan's paper. It is worth noting that in Captain Scott's case the crystals could not be identified in the centrifuged deposit of the urine, but they could be seen clinging in abundance to the sides of the glass vessel and showed the typical structure under the microscope. The crystals were washed off the sides of the vessel, tested chemically, and identified as sulphapyridine by Miss Gilchrist of the biochemical department of the Royal Infirmary, Edinburgh. Unless concretions of acetyl-sulphapyridine are present in large quantities they are readily redissolved and cannot be identified in the urine. Southworth and Cooke (1939), for example, found them in the urine of only 1 of 3 patients who developed haematuria after sulphapyridine. Occasionally renal calculi of acetyl-sulphapyridine may be demonstrated as negative shadows in excretory or instrumental pyelograms (Plummer and McLellan, 1940). In spite of the sulphur-containing radical the stones themselves are not opaque to *x* rays. In the absence of crystals it may be difficult, and at times even impossible, to determine at the onset whether the haematuria should be attributed to the sulphapyridine or whether it is a symptom of an acute nephritis, since many of the patients under treatment with the drug are victims of acute infections in which nephritis is known to occur as a complication. If the bleeding is due to acute nephritis numerous casts in the urine or oedema or shivering attacks will eventually point the diagnosis. These symptoms are no more characteristic of renal damage due to sulphapyridine than they are of aseptic calculous pyelitis and ureteritis in general. Furthermore, the haematuria due to sulphapyridine is often accompanied by renal pain or colic which is far more severe than the lumbar pain that is an occasional feature of acute nephritis.

Occasionally pain precedes the appearance of haematuria, and Southworth and Cooke (1939) describe a case in which the possibility of an acute appendicitis was seriously debated. The patient was a girl of 17 who developed a transient attack of pain in the right lower quadrant of the abdomen two days after she had been started on a course of sulphapyridine for a respiratory condition. On the following day the pain recurred and was accompanied by burning pain on micturition. Tenderness was most marked over McBurney's point. Owing to the onset of gross haematuria and the fact that her abdominal tenderness extended up to the right costo-vertebral angle, conservative treatment was decided on, and the sulphapyridine, of which she had received 10.5 grammes, was stopped. Her symptoms subsided rapidly.

Treatment

As a rule the symptoms of haematuria and renal colic disappear within twenty-four hours when sulphapyridine is withheld and fluids are forced. In the event of signs of nitrogen retention 5% glucose or 4.28% sodium sulphate solution should be administered by the intravenous "drip" method. If anuria develops and persists in spite of these measures, cystoscopy and ureteric catheterization or, if need be, renal pyelotomy, as suggested by Tsao, deserve consideration owing to the tendency for plugs of concretion to block the orifices of the bladder. This was not carried out in the case I have described, as it was not until the patient had recovered that I had the opportunity of perusing the relevant literature and of learning something of the nature of the condition.

I wish to acknowledge my thanks to Colonel J. M. Mackinnon for permission to publish this record, and to Major C. E. van Rooyen for his friendly co-operation. My grateful thanks are also due to Major Ian Murray for much helpful discussion during its preparation.

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EXPERIENCES IN TREATMENT OF PERIPHERAL NERVE INJURIES WITH AMNIOPLASTIN

BY

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For some time efforts have been directed towards finding a substance which would isolate a damaged structure by preventing it adhering to its surroundings and which by ultimately becoming absorbed would leave the structure concerned quite free. Wilder Penfield and his associates (Chao *et al.*, 1940) experimented on cats by placing various membranous materials between the scarified cerebral cortex and a flap of overlying soft parts. They found that of the materials used the best was a prepared form of human amniotic membrane which they called amnioplastin. This was absorbed in about three weeks, leaving the cortex free from adhesion.

Following Penfield's report it appeared that this substance would be useful in the surgery of peripheral nerves as well as in that of the central nervous system. Having had some experience of it in eight intracranial cases in which it was used to prevent meningo-cerebral adhesions, and having noted the frequency with which peripheral

nerve lesions so far met with in the present war are due to the involvement of nerve trunks in scar tissue, I thought it desirable, after freeing such trunks, to attempt to isolate them by wrappings of amnioplastin. It is not proposed here to discuss the intracranial uses, but, in order to afford comparison with peripheral lesions similarly treated, an example is given of the type of cerebral case in which the membrane has been used.

Type of Cerebral Case

Old Gun-shot Wound of Head. Meningo-cerebral Adhesions: Traumatic Epilepsy

A fitter aged 51 had three years previously been shot through both frontal lobes with a large-calibre revolver bullet. Dense meningo-cortical adhesions anchored both frontal lobes and were regarded as responsible for his epileptic fits, which had developed subsequently to the shooting accident. On May 7, 1940, a large bone flap was turned down; the adhesions were separated by endothermy, and the frontal lobes were wrapped in amnioplastin. He has remained well and free from fits since.

Peripheral Nerve Cases

The membrane has been used in 12 cases of injury involving the following peripheral nerves: ulnar 2, median 4, musculo-spiral 1, great sciatic 2, external popliteal 3. Brief details of these cases are shown in the accompanying table. It is realized that these are early days in which to draw conclusions as to ultimate results, and I have not yet had an opportunity to reopen a wound and re-examine a nerve trunk that has been isolated by the membrane some time previously; but the results up to date are so encouraging in the incomplete lesions and cases of causalgia so far dealt with that it appears advisable to report our experiences.

Preparation, Preservation, and Method of Using Amnioplastin.—The amnioplastin has been prepared in the surgical unit at Cardiff by Mr. Charles Langmaid and members of the unit laboratory staff from placentas obtained from the obstetric department, in charge of Prof. Gilbert Strachan. The method of preparation has been that described by Penfield and his associates (Chao *et al.*, 1940; Penfield, 1940), and the membranes have been preserved in alcohol (70%), in stoppered bottles. Just before use—i.e., on the morning of operation—enough amnioplastin for what is intended is removed from its storage in spirit and boiled for half an hour in distilled water in a large beaker. After boiling, the amnioplastin, which is slightly cloudy when it comes out of spirit, is more transparent and is of a light green colour. It is not unduly fragile, is easily handled, and resembles rather thin oil-silk. It is taken from the beaker and floated on saline in a large bowl, when pieces may be cut to the requisite size and shape.

Technique of Use in Peripheral Nerve Cases.—The nerve trunk having been isolated and freed from scar tissue both above and below the level of the lesion, and bleeding having been attended to meticulously, so as to obtain a dry field, the site of the lesion (which may be a suture line, an area that has been strangled by dense fibrotic tissue, or a length of nerve anchored by numerous adhesions) is wrapped around by a suitably shaped piece of amnioplastin. This piece must be large enough to extend beyond the limits of the lesion in order to include some normal nerve trunk both above and below it and thus completely isolate it.

Results

Except in one intracranial case, that of a large recurrent meningioma, all wounds have healed by first intention. Results have been both gratifying and encouraging. Early functional restoration has been noted in most and a freedom from pain in all. The relief of pain, cessation of sweating, and early restoration of normal skin appearances in the two examples of causalgia have been particularly striking. It remains for the future to determine whether the late results of these peripheral cases are equally good, and for an opportunity to occur by which we may ascertain from the condition of the operation field whether neural isolation persists and whether the membrane is absorbed as completely in man as in experimental animals.

Table giving Details of Peripheral Nerve Lesions treated by Amnioplastin Isolation

Case	Age	Lesion	Operation	Date of Operation	Result
1	22	Ulnar. Bomb wound, forearm, Aug., 1940. Motor paralysis absolute; sensation lost over ulnar distribution	Freeing of nerve from dense adhesions. Wrapped in amnioplastin	20/11/40	Almost complete recovery within six weeks
2	20	External popliteal. Bomb wound, May, 1940. Drop-foot	Freeing of nerve from scar tissue. Wrapped in amnioplastin	26/11/40	Progressive recovery—not yet complete
3	27	Median at wrist. Causalgia. Cut tendons and nerve. June, 1940	Freeing of nerve from scar tissue; incision made into nerve. Wrapped in amnioplastin	26/11/40	Pain relieved, sweating ceased. Rapid recovery—incomplete
4	19	Median in arm. Musculo-spiral at elbow. Bomb wound at Dunkirk, May, 1940	Freeing of median nerve, which has been partially divided, from dense scar tissue	29/11/40	Slight improvement
5	26	Median just below elbow, following crush of arm in watertight door and fracture of ulnar, Sept., 1940	Nerve found to be embedded in extremely dense scar tissue. Nerve freed and wrapped in amnioplastin	20/12/40	Much recovery in short time
6	20	Median at wrist. Bomb wound of forearm, May, 1940. Causalgia	Neuroma involving median and tendon of flexor carpi radialis. Neuroma dissected off nerve. Incisions into trunk of nerve	2/1/41	Pain relieved. Recovering
7	23	Great sciatic in buttock and comminuted fracture of great trochanter by machine-gun bullet, Aug., 1940	Nerve exposed and found to be partly destroyed at its exit from pelvis; much scar tissue around it. Freed; isolated in amnioplastin	31/1/41	No change
8	28	External popliteal and fracture of fibular neck, Nov., 1940	Exposure of nerve and isolation in amnioplastin	17/2/41	Recovering rapidly
9	21	Musculo-spiral. Wrist-drop following inoculation with T.A.B., Oct., 1940	Exposure of nerve; separation of adhesions; isolation in amnioplastin	25/2/41	Recovering
10	20	Great sciatic in buttock. Injury by injection into nerve, June, 1940	Perineuritis. Isolation in amnioplastin	7/3/41	Recovering
11	19	External popliteal lesion and fracture of fibula by bomb explosion, Jan., 1941	Nerve found divided; proximal neuroma. Neuroma excised; end-to-end suture with knee flexed; amnioplastin isolation	27/3/41	No change as yet
12	35	Fractured surgical neck of humerus; damaged median and ulnar trunks. Accident at sea, Dec., 1940	Perineuritis and myositis ossificans. Isolation of nerve trunks with amnioplastin	29/3/41	No change as yet

Conclusion and Summary

Amnioplastin appears to be a valuable material for the isolation of nervous elements. Its use so far in the surgery of peripheral nerves has been encouraging, relief of pain and restoration of early function being noted in cases in which it has been used after freeing nerves strangled in scar tissue.

Experience in the use of amnioplastin has been obtained in 8 intracranial cases, 12 peripheral nerve cases, and in one or two additional instances, such as a scar in the popliteal space. The type of peripheral nerve case in which the membrane has been used, the method of its employment, and the results so far obtained are here reported. These results are so encouraging as to suggest its continued and further use.

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A HISTORY OF THE RESCUE AND AFTER-CARE OF TWO CASES AFTER FOUR DAYS' BURIAL

BY

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On a Thursday, at 1 a.m., a bomb struck a block of three-storied cellared houses. Some of these houses were completely destroyed. As it was known that a number of people were in them at the time of the disaster rescue work started almost at once, but with little hope of saving anyone alive. At 6 p.m. on Friday an elderly woman was rescued alive, but in such a serious condition that she died a few days later.

The First Rescue

At 7 p.m. on Sunday I was sent for, as the rescue squad had heard a voice under the debris. On arrival I made contact with the trapped girl, one of my own patients, Miss F. B., aged 21, whose voice could faintly be heard, obviously at some distance below the debris. She told me her name, that she knew her father and mother were dead, and that she was quite immobile except for a little movement of the left hand. It was astonishing to find her so completely intelligent, and throughout the six hours before she was finally removed at 1 a.m. on Monday—exactly ninety-six hours from the time she was first trapped—she retained her intelligence and was of great help in guiding the rescue squad in their difficult task.

At 9.30 p.m., debris having been removed entirely by hand and several wooden beams sawn through, a narrow hole four feet in depth allowed of contact with the girl's left hand. It was just possible to feel her pulse, which was well perceptible at about 90 beats per minute. A short time afterwards her head was uncovered, when it became obvious she was face downwards in position. By means of a length of rubber tubing and a feeding-cup we succeeded in getting her to rinse out her mouth, after which she was allowed to swallow a little hot well-sugared tea. Shortly afterwards, as more of her body became exposed, I gave her one-third of a grain of morphine, and about quarter-hourly sips of tea, by now out of the feeding-cup direct. By midnight she was completely exposed at the bottom of a deepish hole. The rescue squad also succeeded in burrowing sideways at her body level, a burrow sufficient to admit head and shoulders with debris supported by some flooring cross-beams. It was through this burrow that we succeeded in delivering her.

She was lying crouched, face down, her knees on her chest and heels under her buttocks, her right arm under her chest and left arm by the side of her face—a normal breech position. Across her back was the dead body of her father. It was evident we dared not remove him before the girl, so we arranged the rescue squad with one man from above easing up the dead body as much as possible, another down the main hole supporting the chin, and a third grasping her hips and gently pulling her through the small narrow side burrow. As she was being removed she told us there was a woman alive next door. Once on the warm stretcher I immediately straightened her legs and sent her to hospital, where all was in readiness for her reception.

The Second Rescue

On investigating her report that a woman was alive next door, we found, to our surprise, that this was true. After shouting we heard a voice say, "I am A. D. [aged 34]; I am all right, and walking about in the cellar. I have a baby with me, who is not very well, and we have some bottles of milk." This turned out to be delirium, and it was some hours before contact was made. It was then discovered that she was lying on the cellar stairs, her head higher than her feet, and completely immobile.

The only way to deliver her was through a narrow aperture formed by the absence of the upper panel of a door, the rest of the door supporting a mass of debris. It was impossible to risk cutting away the side of the door, but it was possible to remove a triangular piece of the lower panel. Her pulse was weaker than the girl's, but countable at about 100. She also received morphine, and was fed in a similar way to the first patient. The dead body of a 3½-year-old boy was lying under her right arm. To deliver her through this narrow aperture one man was able to step inside the hole and just scramble down to place both hands under her shoulders; another man, lying on the debris held by his heels, was just able to reach her legs. I lay over the aperture and, as she was eased upwards, succeeded in grasping her shoulders and bringing her out of the hole over my own right shoulder to stretcher-bearers behind. This was at 6 a.m. on the Monday, 101 hours after being buried. She also was immediately sent to hospital.

Treatment of the Patients

When admitted both patients were placed in warm beds with suspended cradle lamps and received a transfusion of two pints of plasma. Blood pressure on admission was: Miss F. B., systolic 85, diastolic ?; Miss A. D., systolic 90, diastolic ? 70. After transfusion both blood pressures were 140/80.

General Examination of Case I.—Severely shocked, but perfectly conscious and mentally very alert. Very thirsty. Eyes bright and free from grit; lips and tongue abrased and some dirt ingrained; air passages clear—no evidence of gritty lungs. A few small pressure sores on back and large area over sacrum. Full range of movement in upper limbs; small superficial patches of skin gangrene over patellae; both lower limbs stiff, and foot-drop present on left. One gramme of sulphanilamide four-hourly for forty-eight hours, followed by one tablet (0.5 gramme) four-hourly for four days. Frequent hot drinks taken very well. All pressure sores dressed with gentian violet; nursed on an air-bed; right foot splinted; rest of skin perfectly clear. Extremities were warm.

General Examination of Case II.—Severe shock; cold; mental condition incoherent with periods of delirium; very thirsty. Eyes clear; tongue dry; air passages clear—no evidence of gritty lungs. Bruising of both legs, with large gangrenous patch on right thigh posteriorly, lateral aspect of right leg, and above left outer malleolus; a smaller patch of superficial skin gangrene on right side of chest, also on both wrists posteriorly. Patient was not able to move either of lower limbs; the right leg and foot were oedematous, also right hand and arm. Warm fluids were

taken freely. All patches were treated with gentian violet, and sulphanilamide was given as in previous case.

Both patients also received 2,000 units A.T.S. Within twenty-four hours mental condition became perfectly clear; right foot-drop developed, and foot was accordingly splinted.

Subsequent History

Both patients steadily improved. No vomiting; solid food was begun on the third day, following an enema. On the fourth day both began to bend the affected knee; oedema steadily diminished. Urine, tested daily, revealed nothing abnormal, and the output was never less than 75% of intake. As in cases reported in the *Journal* of March 22, the non-protein nitrogen was estimated on both, and was found to be well within the normal limits—25 mg. per 100 c.cm. in one and 27 mg. in the other.

By the end of the week the oedema had practically disappeared; there had been no vomiting, the bowels were acting normally, blood pressure in both was 148/85, and fluid output was equal to intake. After ten days all gangrenous patches were separating at the edges, leaving clean granulating surfaces underneath. No oedema was present. Slight movement of the foot was noticed.

At this stage Miss A. D. showed evidence of slight left ulnar nerve injury with some median involvement, only fingers affected; the hand was splinted in dorsiflexion. At the time of writing, thirteen days after admission, this is already showing signs of clearing up, and the general condition of both patients is excellent. Stringent precautions have been taken all along, no visitors having been allowed until the eleventh day and the cradle lamps still being in use. Both are eating and sleeping normally, and there has been no change in their mental condition. They have not talked much of their experiences, nor have they as yet been questioned.

Commentary

These two cases raise several points of both general and medical importance. I have suggested to the municipal authorities that it would be of great advantage if some form of sound-detector could be employed on the site of a disaster as early as possible. Both patients state that whereas they could hear everything going on above them—and Miss F. B. says that her father was alive for two days and Miss A. D. that the child lived for nearly three days—their voices were not heard until sufficient debris had been removed nearly four days afterwards. The reason for and advantages of a sound-detector are therefore obvious. I suggest also that rescue work should be carried out on the assumption that people are alive though buried, and that work should be done in relays without ceasing. All ambulances should normally carry hot-water bottles (I used three of my own on this occasion) and six feet of rubber tubing with feeding-cup.

The important medical points that occur to one, bearing in mind the positions in which the patients were found and the length of immobility, are: (1) The severe limitation of oxygen supply, and the lack of fluid intake, both acting together, failed to produce the obvious mental and physical reactions. (2) The extraordinarily good condition of the skin and the warmth of the extremities. (3) The absence of irritation conjunctivitis. (4) The clearness of the air passages and the absence of gritty lungs. (5) The comparatively mild nerve-pressure paralysis.

I believe a doctor working in conjunction with the rescue squad is the ideal arrangement when there is any chance of rescuing people alive, and would stress the importance of some form of sound-detector and my belief that the dangerous period after prolonged burying is that between the moment when exposure takes place and the patient's arrival in hospital. Thus treatment on the lines already indicated should be instituted during the actual rescue. Lastly, I would support Prof. H. A. Harris in his criticism of over-treatment. Briefly put, the treatment of "crush cases" should provide a maximum of rest, both physical and mental; a maximum of warmth, both external and internal; and a minimum of interference.

I would like to thank my resident, Miss Walsh, and the nursing staff of the hospital, for their whole-hearted co-operation.

Clinical Memoranda

Oestradiol Benzoate in Hypoglandular Rheumatoid Arthritis

During the past season a number of female patients with rheumatoid arthritis had very limited time to complete a satisfactory course of spa treatment owing to home duties of an urgent nature. Six weeks would be an ideal course for the average case, but some patients could spare only two weeks, and less than three is of very little use.

In the early spring of 1940 I noticed that those who were taking small doses of oestradiol preparations or the synthetic substance stilboestrol for menstrual disorders showed remarkable improvement in coexisting hypoglandular rheumatoid arthritis. In all these cases I decided to supplement treatment with intramuscular injections of oestradiol benzoate in oil. The results have been beyond all expectation, and I now use this method as a routine. Many patients felt distinct improvement within twelve hours of the injections.

The cases varied from slight periarticular thickenings of the hands to marked multiple thickened joints. In one there was complete ankylosis of the knee-joints, but the general health greatly improved. Two patients had multiple thickened joints, pathological deformity of hands, knees, and feet, and very poor mobility. They were becoming totally disabled and were very depressed, and considered their cases to be hopeless. After several weeks' treatment all the mild cases cleared up completely. The two advanced ones made a remarkable recovery. One is almost free from any signs, and the other patient is fit for light occupation.

Oestradiol benzoate has been of great benefit in combination with spa treatment owing to the fact that patients suffering from depression often state that they have a feeling of general well-being during the first day of its use. Injections were given twice weekly intramuscularly in addition to the spa treatment. A high dosage of 50,000 units was used in severe cases, and 10,000 units and upwards for milder ones. Ampoules representing both strengths or a bulk quantity can be used, and a 1-inch-long No. 21 needle was found suitable. Injections were made into the deltoid and were quite painless. The syringe can be kept free from any moisture in a pocket spirit case containing 5% lysol added to the spirit. It is very important to warn these patients, irrespective of age, not to be alarmed if a menstrual cycle begins some days or weeks after the injection. The flow, if troublesome, can be regulated by giving calcium and ergot preparations, but this was not required, or if the cycle date is noted a corpus luteum preparation could be given daily for a week before the next cycle. This preparation is costly and its use in rheumatoid arthritis may not be of any particular advantage.

Oestradiol benzoate is tolerated by all, and has no harmful effects even in pregnancy. Male cases of rheumatoid arthritis also respond to oestradiol benzoate injections, but I have tried only a short course on a few cases in view of any disturbance to the prostate gland. Stilboestrol can be used as a substitute, but in a few cases nausea was complained of even with a small dosage. A recent improvement has been made to stilboestrol which obviates any nausea.

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Reviews

PRACTICAL SURGERY

A Short Practice of Surgery. By Hamilton Bailey, F.R.C.S., and R. J. McNeill Love, M.S., F.R.C.S. Fifth edition. (Pp. 1,015; 880 figures. 30s. net.) London: H. K. Lewis and Co., Ltd. 1941.

New editions appear despite war and paper shortage, and perhaps it is as well, since the authors of *A Short Practice of Surgery* tell us in their preface to this fifth edition that surgery progresses with such rapidity that they have found deletions and additions necessary in every chapter of the previous edition. The biographical footnotes continue to be an attractive feature of this book, but some are incompletely dated or need revising (e.g., J. Hogarth Pringle, p. 62; E. C. Davidson, p. 78; and Cushing, p. 600). Kocher's name appears with bones and joints, but should also appear in the chapter on the thyroid, and Sistrunk's should be attached to the operation shown on page 199. Carr is mentioned on page 769 and without the usual biographical reference, but the authors may not have seen a note on Carr's splint which appeared in the *Irish Journal of Medical Science* for April, 1940. The chapters on neurosurgery would benefit with still more revision: statements such as medulloblastomata being irremovable and catgut being used for dural closure and the bone flap taken out to decompress irremovable tumours would not meet with the agreement of most neurosurgeons. Elsewhere exception might also be taken to the dogmatic statement that the only effective treatment of Banti's disease is splenectomy. On the whole, however, revision has been good, and the book is sufficiently modernized to include a picture of a bomb fragment producing a comminuted fracture and of gas gangrene in a man wounded at Dunkirk. The new edition should ensure the continued popularity of this textbook.

EDUCATION OF EXCEPTIONAL CHILDREN

The Education of Exceptional Children: Its Challenge to Teachers, Parents, and Laymen. By Arch O. Heck, Professor of Education, College of Education, the Ohio State University. (Pp. 536; illustrated. 26s.) London: McGraw-Hill Publishing Company, Ltd.

One of the most difficult problems of education is to provide for those children who for one reason or another cannot or do not fit in with the majority of their fellows. Special education is expensive both in money and in personnel, and the present volume is an effort to evaluate what has been done in America and what ought to be done if exceptional children are to be provided for adequately and successfully.

In the first section what are called socially handicapped children are considered. These are the truants and delinquents, and in the course of the discussion a brief and rather inadequate survey of the causes of these behaviour reactions is given, but the main theme is how the State provides against these difficulties. First, what can be done by teachers and others in the ordinary school is dealt with, then special day schools are described and the advantages and difficulties of parental or, as we should call them, residential schools are discussed. These all cater for the child before he comes to the courts. The State training schools are then referred to, and the change of conception from a penal to an educational character of such institutions is noted. Several such schools are described.

The next section deals with the cripple child, and since the cripple has the same ambitions, desires, and mental abilities as has the average child he is entitled to equal educational opportunities, though his educational programme must recognize handicaps, while initiative and self-reliance should be specially encouraged and he must be kept at school just so long as school will help him intellectually, physically, and especially emotionally. Next the costs and difficulty of providing the necessary equipment for a cripple school are discussed and representative schools are described. Similarly, problems connected with the education of blind children, children with defective vision, deaf and partially deaf children and those with defective speech, or especially delicate children are discussed.

The third section approaches, along similar lines, the problems of the mental defective, which are well known to us in this country, but there is also a discussion of the proper provision for the optimum education of specially gifted children. This movement has aroused much prejudice and opposition in the United States and has scarcely been considered in this country at all, but it has some obvious advantages if the costs could be met and the sentimentalism which will help the defective but do nothing for the talented can be overcome. The last section takes up financial and administrative questions; it is naturally concerned with conditions in America and therefore less applicable to this country.

Although this is primarily an educational book of reference, it ought to be of interest to the medical profession, since proper education of children who are medically unfit is one of the prime essentials in their care.

THE CARDIOGRAM IN CONGENITAL HEART DISEASE

The Electrocardiogram in Congenital Cardiac Disease. A Study of 109 Cases, 106 with Autopsy. By Maurice A. Schnitker, B.Sc., M.D. (Pp. 147. 16s. 6d., or $3.00.) Massachusetts: Harvard University Press; London: Oxford University Press. 1940.

In his book on the cardiogram in congenital heart disease, which is stated by the publishers to be the first of its kind, Dr. Maurice Schnitker has attempted something which presents great difficulties. In the first place, the lesions are often multiple or complicated by acquired disease; and, secondly, post-mortem examination is essential to establish the exact nature of the defects. It is almost impossible for a single observer to see a sufficient number of cases and follow them to necropsy, and Dr. Schnitker's series of 109 cases (106 with necropsy) are largely collected from the literature, which, however unavoidable, does detract from their value. The cases are classified as acyanotic, late cyanotic, and permanently cyanotic, and a general description of each lesion is followed by fairly detailed clinical and post-mortem reports and illustrations of the corresponding cardiograms. This compilation will have its uses, but it also emphasizes the obscurity and complexity of its subject.

ACTIONS AND USES OF DRUGS

Synopsis of Materia Medica, Toxicology, and Pharmacology. For Students and Practitioners of Medicine. By Forrest Ramon Davison, B.A., M.Sc., Ph.D., M.B., Assistant Professor of Pharmacology, School of Medicine, University of Arkansas, Little Rock. (Pp. 634. 25s.) London: Henry Kimpton. 1940.

Prof. F. R. Davison has modestly entitled his work *Synopsis of Materia Medica, Toxicology, and Pharmacology*; it is true that the volume is of relatively small size, but since it contains well over 600 pages of small print it is, in fact, a very comprehensive textbook. It has been written from the clinical aspect and is concerned with the properties of those drugs that are of

practical importance. These are classified according to the character of their actions; the pharmacological effects, therapeutic uses, and toxicology are described in each case, together with any pharmaceutical properties that are of therapeutic interest. Thus the book covers a very wide range, for in addition to the pharmacology of medicinal drugs it gives a description of the toxicology of the more important poisons, such as lead, arsenic, and phosphorus. The wide range covered causes the description of pharmacological actions to be somewhat brief, and some of the statements made are open to question. On the other hand, Prof. Davison gives information about a remarkably large number of subjects and pays particular attention to recent advances in therapy. For example, accounts are given of the therapeutic uses of snake venom, heparin, and sobisminol.

The close printing of the volume makes it difficult to read continuously, but it constitutes an excellent work of reference, and its value in this respect is increased by the provision of selected references to recent literature.

Notes on Books

A Review of the Psychoneuroses at Stockbridge, by GAYLORD P. COON, M.S., M.D., and ALICE F. RAYMOND, A.B., is published in Massachusetts by the Austen Riggs Foundation. Stockbridge is a residential home for psychoneurotics which was run by Dr. Austen Fox Riggs, to whom this book is in some respects a tribute. The method of treatment is described as re-education and persuasion, and of later years some superficial analysis has been employed. After their first treatment the patients go home on trial visits, return for follow-up visits, and contact is retained by correspondence. In the twenty-five years of its existence some 5,300 cases were noted, but a sample of 1,060 cases only were chosen for this study. These were chiefly anxiety cases, and of these the history of ninety-two is summarized. Statistical data of all sorts of factors in the rest is given, and although the method of treatment is accorded considerable approbation the results are not particularly striking, 30% being considered to be much improved, 28% improved, 6% unimproved, and 36% unknown. Among various appendices one gives a sort of survey of psychology which is handed in pamphlet form to the patient for his study at leisure. While this book contains a collection of odd statistical records, some of which may be useful for reference, it cannot be regarded as very interesting or very instructive to the ordinary reader.

Textbooks on histology and embryology are largely written for the use of medical students, but there is another class of readers who require a practical knowledge of these subjects—namely, science students who are preparing to teach elementary biology in schools. The small book on *Practical Histology and Embryology*, by NELLIE B. EALES, D.Sc. (Macmillan, 3s. 6d.), is admirably adapted for this type of student. Its general trend is well indicated in the opening sentence of the author's preface: "There is always satisfaction to be derived from a well-stained section or slide mount, and to make it for oneself gives even greater pleasure." The book shows the way to prepare such specimens, and briefly describes the elementary principles concerned in interpreting the appearances which are seen when the sections have been mounted and are viewed under a microscope. In the section on embryology there are a few outline drawings which accurately represent certain stages in the development of fish, frog, chick, and rabbit embryos. One would like to see more of these, and also some notes on the use of projection apparatus, with a view to encouraging the practice of making accurate records of work accomplished in the laboratory. The book represents the work of an experienced and devoted teacher, and merits a wide circulation.

No. 18 of the *Proceedings of the University of Otago Medical School* has been published at Dunedin under the editorship of Prof. J. B. Dawson. It consists of reprints of papers which have appeared in the *New Zealand Medical Journal*, the *British Medical Journal*, and other journals during 1939-40; also Prof. D. W. Carmalt Jones's address at the graduation ceremony in May, 1939. The volume may be consulted in the Library of the British Medical Association.

The University of California has published its *Hospital Formulary and Compendium of Useful Information* in a form convenient for the pocket. Doubtless it will often be found there, for the amount of helpful information compressed into this slender volume is indeed remarkable. Out of its 255 pages only 16 are devoted to the hospital prescriptions, the remainder ranging over such diverse fields as vaccines, diet tables, infant welfare, laboratory procedures, and common emergencies. Truly a *multum in parvo*. It is published at $2.00 by the University of California Press, Berkeley and Los Angeles.

Preparations and Appliances

X-RAY STRETCHER OUTFIT

An *x*-ray stretcher outfit has been introduced by Philips Lamps Ltd. (Century House, Shaftesbury Avenue, W.C.2) with the object of reducing the amount of handling to which acute cases are subjected in the journey to and from the *x*-ray room. With this stretcher the patient undergoes one move only—carried out at the bedside by the nursing staff. The outfit consists (1) of a special form of wheel stretcher suitable for use as an *x*-ray table, and (2) of a pedestal Bucky unit to which the stretcher can be coupled so that the two together form a horizontal radiographic Bucky couch, and only the tube stand or mobile unit is needed to complete the installation. In the *x*-ray department the stretcher with the patient already in position is wheeled over the pedestal Bucky, which is raised into contact by pressure on a foot pedal, and the radiograph is then made. The apparatus can be adapted for other uses: with the completion of a head lamp the pedestal Bucky becomes a convenient radiographic apparatus for the skull, and with the addition of a back rest it can be made to serve as a pelvimetry outfit. Every detail of construction has been thought out to give the utmost facility and convenience, especially in a casualty department working under pressure.

ASCORBIC ACID FOR INFANTS

Infant "celin" tablets (Glaxo Laboratories Ltd.) contain 5 mg. ascorbic acid, a quantity which the vendors state to be equivalent to the content of two teaspoonfuls of orange juice. Messrs. Glaxo provide a pamphlet which explains the necessity for an adequate supply of ascorbic acid in infant feeding, and point out that deficiency of this vitamin is likely to be caused by the scarcity of oranges. The tablets are sold at 12s. per 1,000, or 2s. 3d. per gramme of ascorbic acid, a price which is less than the cost of an equivalent quantity of orange juice.

OXYLAN FOR OXYURIASIS

"Tabloid oxylan" (Burroughs Wellcome and Co.) has the chemical constitution *p*-benzylphenyl carbamate. It is recommended for the treatment of oxyuriasis (threadworm infestation) in children and adults. The makers state that it is designed to replace a preparation of foreign origin. The compound is stated to be efficacious and to be free from undesirable side-effects. The adult dose is 7½ to 15 grains (1/2 to 1 gramme).

SYNTHETIC LEMON POWDER

Crookes's lemon powder (synthetic) is a powder which provides a synthetic lemonade. One teaspoonful in a fluid ounce of water provides a drink which contains 10 units (0.5 mg.) of ascorbic acid and 80 mg. of citric acid per mille. This is similar to the content of these substances in undiluted lemon juice. The makers point out that the absence of lemons from the English market has created a need for a lemon powder which is an adequate substitute for lemons in regard to its content of ascorbic acid.

British Medical Association

CLINICAL AND SCIENTIFIC PROCEEDINGS

Oxford Division

Two general meetings of the Oxford Division have been held at the Radcliffe Infirmary, Oxford, during recent months. Non-members and clinical students attended, and Dr. W. STOBIE presided on both occasions.

PRINCIPLES OF RESUSCITATION

At the first meeting Prof. L. J. WITTS opened a discussion on the principles of resuscitation. He first said that he agreed with Mr. Rock Carling that resuscitation was primarily a physician's task. Referring to the Oxford area, he said that in the event of an air attack 500 casualties might reasonably be expected, and the Radcliffe Infirmary might have to cope with 250 casualties in twenty-four hours. Eighty beds could be made available in about twenty minutes, with more within twenty-four hours. The Infirmary could deal with 100 severe casualties in about twenty-four hours, given that the four available surgical teams might each require one hour's operating time per casualty. There need be no desperate hurry to get most of these patients to the theatre. They must first be made warm and rendered fit for surgery; but there must, of course, be no undue delay. The resuscitation and pre-operative measures should be regarded as one entity. Case notes on each patient were desirable, and students were being trained to take notes so far as possible as usual. Traumatic shock was due to loss of fluid from the circulating blood. This could be caused by (1) exudation of plasma into tissues—for example, in patients suffering from burns or crushed under masonry; (2) loss of blood; and (3) a combination of both.

Treatment must be directed to the following. (*a*) *Fluid Replacement.*—At least forty-eight bottles (two-pint) of blood or plasma per 100 casualties would be required. Plasma kept better than blood and required no grouping, but it was more expensive, because three bottles of blood were required to produce one bottle of plasma. Fluid by the mouth could be given as hot tea, milk, or beer. (*b*) *Warmth.*—This could be given by the electric cradle, hot-water bottles, etc., but its exact application had not yet been fully worked out. (*c*) *Relief of Pain.*—In casualties requiring operations this concerned the anaesthetist. Points of importance were the time of the operation, and the fact that casualties with head injuries should not usually be given morphine. (*d*) *Oxygen.*—The patient should get the highest possible concentration. The tissue anoxia was due to the feeble circulation in shock; therefore as much oxygen as possible should be dissolved in the plasma itself in addition to that in the corpuscles.

PREMEDICATION FOR ANAESTHESIA

Prof. R. R. MACINTOSH, discussing relief of pain and premedication from the anaesthetist's point of view, said that patients did not all start from the same metabolic level when being anaesthetized. Youth, pain, fear, fever, and a quality of resistance known to the Americans as "sthenicity" all tended to raise patients above the hypothetical starting-point of anaesthesia. The aim of sedative premedication should be to lower each patient as nearly as possible to this common hypothetical starting-point. Drugs used for this purpose acted mainly by lowering the basal metabolic rate. They should be given if possible one and a half hours before the anaesthetic. Atropine or hyoscine was also given to inhibit bronchial secretions stimulated by anaesthetics such as ether; atropine began to act in about ten minutes from injection subcutaneously. He suggested that a label should be fixed to each casualty while in the ward stating the name, the pre-operative drugs given, and the time they were given. Post-operative drugs could be ordered on the back of the label—for example, "1/6 grain morphine if in pain or restless." The "tonsil" recovery position was the best post-operatively. The patient should not be left on his back owing to the risk of respiratory obstruction by the tongue.

Dr. FLETCHER demonstrated the bottle used by the Oxford Blood Transfusion Service for the recipient; this was supplied with sterile needle ready for use. If venepuncture was difficult, he said, it was better to cut down on the vein at once. Difficulty in getting the blood to flow in shocked patients might be due to spasm. A Higginson syringe or a sphygmomanometer bulb and cuff attached to the air inlet of the bottle could be used to raise the pressure and counteract the spasm.

Dr. MOLE demonstrated apparatus for oxygen therapy. He said that some type of flowmeter was necessary. A Boyle's type bubble bottle gave this in its simplest form and was fairly satisfactory. Methods of administration were: (1) The simple funnel and tube; this was practically useless. (2) An anaesthetic face-mask, which could be used for short periods but was distressing to the patient. (3) Nasal catheters, which were fairly satisfactory; extra holes in the catheter increased its effectiveness. The catheter must be lubricated and passed far enough into the nasal cavity along its floor. The correct length to insert was the distance between the nostril and the lobe of the ear; this was about three or four inches. A catheter in both nostrils was more effective than one. The spectacle frame was a useful carrier for two catheters. Three litres per minute could be delivered comfortably by one nasal catheter; this would raise the alveolar oxygen to 30%. Five litres per minute could be administered with two catheters, thereby raising the alveolar oxygen to 45% or 50%. (4) The B.L.B. mask, which was the most efficient and comfortable method. A nasal or an oro-nasal type could be used. With this mask the alveolar oxygen could be raised to 90% by using a flow of six to eight litres per minute with the air-holes closed. This mask could also be used to relieve surgical emphysema or intestinal distension by replacing the relatively non-absorbable nitrogen by oxygen.

A discussion followed in which Mr. G. R. GIRDLESTONE stressed the importance of speed in getting casualties to the theatre in less than six hours. He also suggested experiments to see whether organisms in wounds could be kept quiescent by means of ice applied locally while the patient was treated by warmth and restoratives.

RECENT DEVELOPMENTS IN IMMUNIZATION

Prof. G. S. WILSON, in a talk on modern developments in immunization methods, said that in considering any prophylactic inoculation the following principles must be remembered. (1) It was not worth while vaccinating patients against a disease unless that disease was serious enough to warrant it. (2) The disease must be common enough to make it worth while. (3) The vaccine must be of proved potency. (4) Reaction to the vaccine should be relatively mild in comparison with the disease itself. If these criteria were accepted, chicken-pox and rubella could be ruled out at once. Influenza could also be ruled out because the vaccine was still experimental; the disease—probably due to a virus—was not a bacteriological entity. Scarlet fever immunization was unsatisfactory, the reactions being often as severe as the disease. This left, in peacetime, diphtheria, measles, whooping-cough, and small-pox, to which in wartime could be added enteric fever and tetanus.

Diphtheria.—The protection given by immunization was very good. The disease was uncommon before the first year of life, and the maximum mortality occurred between 5 and 10 years. It would be possible to eliminate the disease if all the children from 1 to 15 were immunized; it could be regarded as satisfactory if 90% or more of this age group were inoculated. The immunity produced was antitoxic, not bactericidal; therefore it was important to immunize all children, as the immunized might become healthy carriers and prove a source of danger to the non-immunized. A.P.T. was the most satisfactory agent, but he did not recommend the one-shot method. Two injections acting as primary and secondary stimuli were necessary. The second injection should never be given under four weeks. Prof. Wilson advised 0.1 c.cm. for the first and 0.3 c.cm. for the second injection. This would make 98% to 100% of children Schick-negative. Reactions were rarely severe under 15 years, though there might be local redness, swelling, and tenderness. This method was

not advised for adults, as severe reactions might occur. If all pre-school and school children were immunized the adults need not be worried about. Prof. Wilson suggested as a complete course that the first two injections should be given before school age, followed by 0.3 c.cm. on going to school, and 0.3 c.cm. about the age of 10. A sudden outbreak of diphtheria at a school could be controlled by giving each child 500 units of special refined antitoxic serum (0.1 c.cm.) in one arm, and 0.1 c.cm. of A.P.T. in the other at once. All should have throat swabs taken and all carriers found should be isolated. The school could return the following day. Four weeks later all should be given their second dose of A.P.T. (0.3 c.cm.), and after a further two weeks the carriers could be allowed to return.

Measles.—The mortality was maximal in the second year, and 85% of deaths occurred in the first five years. Two methods of prophylaxis were available: (*a*) convalescent serum and (*b*) pooled adult serum; the former was about twice as potent as the latter. For complete protection the serum should be given within three days of infection; for partial protection, which was usually preferable as it gave permanent immunity, the serum was delayed to between the third and fifth days, or else half a dose of serum was given.

Whooping-cough.—The maximum mortality was in the first year. Large doses of vaccine were required for immunization, starting at about 10,000 million, three or four doses being given at weekly intervals from the end of the second or third month of life. The duration of protection was unknown. This injection could be combined with diphtheria immunization.

Enteric Fever.—This was not normally common, but wartime increased the risk of infection. Vaccines gave substantial, but not complete, immunity. Reactions might be severe in the first three days following injection. A new vaccine containing alcohol instead of phenol was being produced which was more potent and after which there was less reaction. In starting general immunization Prof. Wilson advised concentrating on those persons most likely to become infected—for example, doctors, nurses, A.R.P. workers, etc. The Ministry of Health had advised against general immunization at present unless an epidemic appeared. Prof. Wilson felt that the risk of an epidemic occurring in Oxford was probably not very great, but that it might be worth while to immunize the population gradually.

Tetanus.—The risk of infection was very slight in peacetime, but was great in wartime. A toxoid similar to that for diphtheria was now available (formol-precipitated), two doses of 1 c.cm. being given with six weeks' interval. This produced a considerable degree of immunity, but as anti-tetanus serum was given to every casualty as a routine it was at present doubtful if it was worth immunizing people as well.

NUTRITION

At the second meeting Dr. H. M. SINCLAIR opened a discussion on nutrition. After a brief review of research work on vitamin deficiency and some reference to the value of protein, fat, and carbohydrate in proper proportion in the diet, and also of minerals, especially calcium and iron, he said that there was much public ignorance about the importance of a properly balanced diet. The idea that orange juice supplied all that was necessary in the way of vitamins was common. He then discussed the importance of the fat-soluble vitamins A, D, E, and K, and of the water-soluble vitamins C, P, and the B complex. War conditions increased the likelihood of deficiency arising from the severe restrictions on fats and raw fruit. The simplest and cheapest way of avoiding such deficiency was to take one of the various vitamin concentrates on the market. Deficiency of one vitamin alone practically never occurred. In reply to a question as to how much harm could be done by the ingestion of excess of vitamins, Dr. Sinclair said that only two of them—vitamin D and nicotinic acid—were toxic if taken in excess. But very large amounts were needed to produce symptoms of poisoning. A few years ago some deaths were reported from calcification of the breast and blood vessels in children who had been given halibut-liver oil in doses suitable for cod-liver oil. It had not been realized at the time that halibut-liver oil contained much more vitamin D than cod-liver oil.

Nova et Vetera

SOME TEXTBOOKS OF FIFTY YEARS AGO

Dr. JOHN R. KEITH writes from Southsea:

I was greatly delighted by the Nova et Vetera article bearing the above title (March 15, p. 413). It recalled to memory many pleasant hours spent in reading several of these books and others suggested by them. For example, what a charming writer was John Milner Fothergill, who combines poetry and anecdote with invaluable clinical information. His *Physiological Factor in Diagnosis* is of the highest value; so, too, is *The Antagonism of Therapeutic Agents, and What it Teaches.* Also his brochure, "What to Ask," is what every young general practitioner ought to read if it is still in print. Many years ago I wrote an article on the value of perusing medical literature, and among the books I mentioned was King Chambers's *Clinical Lectures.* I sent a reprint to Sir William Osler, who acknowledged it by an appreciative postcard, in which he said that King Chambers's *Renewal of Life* was a favourite book of one of his teachers in Toronto. Among other writers of medical books of bygone days which may be read with much profit are Furneaux Jordan, the author of *Surgical Enquiries* and his Hastings Essay on Shock; and Thomas Inman, whose monograph *On Myalgia* is one of the most helpful medical books I have ever read. With regard to Inman, Cameron Gillies in his *Counter-Irritation* writes: "If first-class men produce first-class work only to lie buried in dusty heaps of tomes in out-of-the-way corners of our libraries and museums, it is not surprising that medical progress is so slow and uncertain." Highly useful to the general practitioner are Peter Hood's *On Bone-setting* and Wharton Hood's *Treatment of Injuries by Friction and Movement.* A medical man well known to me was once condemned to an inactive life for several weeks through ignorance of the existence of this book. He had ruptured several fibres of one of the gastrocnemii. Had he known of this volume he would have been able to continue active medical practice without difficulty. Another useful book concerning injuries is Anglin Whitelock's *Sprains and Allied Injuries of Joints,* which contains what I have found to be the best method of reducing dislocated semilunar cartilages. I must not omit mention of Ramsay Smith's *Angio-Neurosis,* which deserves a better fate than being allowed to lie in a first edition. I cannot conclude without a reference to G. H. Sutton's *Lectures on Pathology,* upon which Morley Roberts bestows a high eulogium.

In his interesting Cameron Prize Lecture, delivered last October (*Edinb. med. J.*, 1941, **48**, 1), Prof. E. C. Dodds remarks that few commentators realize that the introduction of aspirin in 1899 marked the start of a new era in medicine. The preparation by von Baeyer of a pure preparation of acetyl-salicylic acid showed that the chemist could synthesize new compounds that proved to be more effective than those occurring naturally. The Germans, Prof. Dodds remarks, were quick to understand the significance of this discovery, and the production of synthetic compounds with specific therapeutic activities was carried out by many scientists. "The years that followed were crowded with successful work in this field, carried out almost entirely by chemists working for the big German chemical firms." Before describing his own work on stilboestrol Prof. Dodds touches briefly on some of the earlier attempts at opotherapy. During the sixteenth and seventeenth centuries physicians were in the habit of prescribing Egyptian mummies as opotherapeutic agents. The treatment became so popular that "the supply of the genuine article ran out, and a new industry to manufacture Egyptian mummies sprang up." The industry was centred in France, where the bodies of executed criminals and slaves were used for the synthetic mummies.

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VACCINE FOR TYPHUS

Following the last world war and its aftermath, which brought malnutrition and poor living conditions in vast areas, influenza swept round the world and exanthematic typhus assumed epidemic proportions in several countries. Recently there have been reports of typhus fever among the Italian troops in Albania, and small epidemics among the civilians in Poland. Now the effects of the civil war in Spain are bearing the same fruit. So far some 300 cases of exanthematic typhus with 27 deaths are said to have occurred in Madrid, and there have been cases also in Seville, Granada, and Almeria. There is a scarcity of washing soap as well as of food, and the Madrid authorities are taking vigorous action in dealing with such possible carriers of lice as mendicants and loiterers. This epidemic has provided an opportunity for a thorough trial in the field of the latest and most promising vaccine yet evolved against the typhus infections. Hitherto, either living attenuated or inactivated typhus rickettsias have been used as a vaccine. The French have employed a vaccine of living murine rickettsias in Morocco and Tunis on a large scale. This may be dangerous in areas where an epidemic is present, or where there is overcrowding, for lice may become infected by feeding on vaccinated individuals while they still have living rickettsias in the circulation. There is also no definite proof that the murine virus vaccine completely protects against the exanthematic strain. When killed rickettsias are used very many must be injected for the vaccine to be effective. Weigl's vaccine,[1] which was widely employed, consisted of a formalinized suspension of guts of lice infected with rickettsias by inoculation per rectum. This entailed the keeping of an enormous louse population and was a laborious procedure. The recently evolved vaccine of Durand and Giroud,[2] which is much simpler to prepare, consists of an almost pure suspension of formalinized exanthematic typhus rickettsias obtained from the lungs of mice inoculated intranasally. Unfortunately four or five inoculations at weekly intervals are necessary.

In an attempt to produce large numbers of rickettsias Zinsser and his colleagues[3] have used chick embryo tissues mixed with the rickettsias and spread on agar slopes. This yields a large number of rickettsias, but is not as simple as Cox's method[4] of injecting the rickettsias directly into the egg yolk sac, which gives an even better yield. Fertile eggs, which have been incubated six or seven days at 39° C., are inoculated into the yolk sac and incubated at 37° C. until the death of the embryo, which usually occurs in five to seven days. The yolk sac is then removed with sterile precautions, ground in a mortar, and suspended in saline, and a nearly pure suspension of rickettsias is obtained by differential centrifugation. Phenol and formalin are added and the vaccine is stored at 2° C. Smears are made from the yolk sac when it is removed to verify the presence of the rickettsias. After trying various methods Gear[5] in Johannesburg found this to be the simplest, one person being able to turn out large quantities in a short time. If desirable, murine and exanthematic rickettsias can be grown separately and mixed in the final vaccine. This vaccine prepared by Cox, as well as fresh vaccine made locally, is being used in Madrid. Three inoculations are given at weekly intervals with little ensuing reaction. A similar vaccine has already been tried out in Peking, but results are not yet available. In view of the suggestion of Pijper and Crocker[6] that the South African epidemic typhus may not be identical with the classical European strain, it will be interesting to hear if there is any difference between the results with the American vaccine and that prepared locally, presumably from a strain recently isolated in Spain. Although British troops in Russia and Serbia in the last war fought side by side with the local soldiers, among whom typhus was very prevalent, few of them contracted the disease, due largely to the vigorous delousing methods carried out. Nevertheless it is comforting to know that, if necessary, there are possibilities of readily producing an efficacious vaccine in large quantities.

It is a far cry from Spain to New Guinea, where a form of endemic typhus exists, though none has been reported yet from either Papua or Dutch New Guinea, which adjoin it. Gunther,[7] in reviewing the disease there, describes the cases as clinically resembling those of Japanese river fever and having agglutinins for *Proteus OX K* in their serum. It is practically confined to the adult white males, and among the diseases attacking whites in New Guinea ranks second only to blackwater fever in importance. Since 1934 there have been seventy-four cases with nine deaths in the Molobe district. The likely vector is a larval trombidiid mite, *Trombicula minor* Berlese 1905, and a bandicoot, *Echymipera cockerelli* Ramsey 1877, is probably the reservoir of the disease. Lewthwaite and Savoor[8] have shown that the scrub typhus of Malaya and the mite fever of Sumatra are identical with Tsutsugamushi disease of Japan, and the disease in New Guinea apparently belongs to this group. Though the Japanese have used so-called attenuated or less virulent strains for immunizing, there is no killed vaccine available against these diseases, in which the mortality rates vary widely, with 4.5% in the Malayan fever, 40% of Europeans and 5% of Japanese in the Sumatran fever, and 40% for the Japanese river fever. It is to be hoped that the embryo chick and its membranes may soon be found to be a satisfactory culture for the mite-borne rickettsias, as it has for the louse-, flea-, and tick-borne varieties.

In the Far East a further step has been made in solving the rare group of undiagnosed fevers in Australia. In 1935 Langan and Matthew,[9] and Unwin,[10] reported that serum of some patients with

[1] *Bull. int. Acad. Cracovie, Classe de Méd.*, 1930, **4**, 25.
[2] *Arch. Inst. Pasteur*, Tunis, 1940, **29**, 25.
[3] *J. exp. Med.*, 1939, **69**, 179.
[4] *Publ. Hlth. Rep.*, U.S.A., 1938, **53**, 2241 ; 1940, **55**, 110.
[5] *S. Afr. med. J.*, 1940, **14**, 476.
[6] Ibid., 1938, **12**, 613.
[7] *Med. J. Austral.*, 1940, **2**, 564.
[8] *Lancet*, 1940, **1**, 255, 305 ; *Brit. J. exp. Path.*, 1940, **21**, 117.
[9] *Med. J. Austral.*, 1935, **2**, 145.
[10] Ibid., 1935, **2**, 303.

"coastal fever" of North Queensland agglutinated *Proteus XK*. Now Heaslip[11] has isolated from numerous cases of coastal fever a pleomorphic organism, usually seen as a Gram-negative bacillus showing bipolar staining or as a Gram-positive anthrax-like bacillus. It grows readily on, or in, artificial media at temperatures between 20° C. and 30° C., but will not multiply appreciably at 37° C., when the media are directly inoculated with the patient's blood. Transmission appears to be by a vector which is either a mite, which seems the most likely, a mosquito, or a tick. It is possible that droplet infection could occur, for the organisms are present in the sputum if the patient develops the specific bronchitis which may be a symptom of the disease. The organism has also been found in the blood in cases of typhus. It is present in 70% of captured rats and bandicoots in the district. The disease occurs all through the year, but the heaviest incidence follows immediately after the rainy season. At this time there is a seasonal increase in the number of mosquitos and larval mites, and as a result of flooding of fields the rats are driven closer to human habitation. Heaslip believes this probably is the same organism as that which Anigstein found in cases of typhus in Malaya in 1933.

TOXICITY OF STILBOESTROL

English clinical experience has not for the most part found that the toxic side-effects sometimes associated with the administration of stilboestrol are of such a magnitude or severity as to contraindicate the use of the drug. In America, however, there has been more hesitancy about the acceptance of the synthetic product in place of the natural hormones in spite of the advantages offered by the oral potency and relative cheapness of the former. The reports submitted to the Council on Pharmacy and Chemistry of the American Medical Association were not unanimous enough on the question of toxicity to allow the Council to recommend the recognition of stilboestrol or its inclusion in *New and Non-official Remedies* until further experimental trials had been undertaken. The report which emphasized the toxicity more particularly was that of Shorr, Robinson, and Papanicolaou,[12] who found that only 20% of their forty-four patients exhibited no toxic symptoms. The rest suffered from some or other ill effect, gastro-intestinal disturbances such as nausea and vomiting being the most common. Other symptoms noted were lassitude, cutaneous rashes, acute thirst, and a psychotic reaction in one case. The evidence of toxicity in the other two reports on which the Council decision was reached was by no means so striking. Buxton and Engle[13] had laboratory evidence of toxicity (albuminuria) in only one of their sixteen cases, and the nausea and vomiting they occasionally found were not thought by them to be a contraindication to the use of stilboestrol. MacBryde, Freedman, and Loeffel[14] studied thirty-seven patients and reported vomiting in only three, although doses as high as 5 mg. a day were given.

Subsequently American clinicians have not in the main supported the view that the occasional toxic effects of the synthetic oestrogen are pronounced enough to preclude its use in human therapy. Karnaky[15] has treated in all 189 cases and found nausea in only a few, and suggested that this was eradicated if the tablets were taken after meals. Some patients in this series had doses of 90 to 234 mg. given during three days without any ill results. Since the nausea and vomiting occur as readily after parenteral as after oral administration, there is reason to suppose that the origin of the symptoms is to be found centrally rather than in local irritation. As certain animal experiments had suggested that stilboestrol caused liver damage, Shorr and his colleagues[1] performed liver-function tests on their patients, with, however, inconclusive results. Freed, Rosenbaum, and Soskin,[16] in a recent study of this question, were unable to obtain any evidence for such a toxic action on the liver. They carried out bromsulphalein retention tests on eight menopausal patients before and during stilboestrol therapy, and on the treated women compared with normal women of the same age group. They finally gave 5 mg. stilboestrol daily for three weeks to a man recovering from an acute attack of hepatitis without the slightest evidence that his convalescence had been impeded. Von Haam, Hammel, Rardin, and Schoene[17] have also reported the results of their administration of stilboestrol to 125 patients. They find that, although 42% of their patients developed some untoward symptoms, these could be controlled in all but nine cases by suitable reduction of the dose. These authors carried out very extensive laboratory investigations, but were unable to detect any disturbance of function. Alcohol test meals were performed on some of their patients, and a slight reduction in acid secretion was noted after nauseating doses of stilboestrol.

It is generally agreed that there is considerable individual variation in the tolerance to stilboestrol, some patients feeling nausea with doses as low as 0.5 mg. a day, while others will take 5 or 10 mg. a day without showing any disturbance. In some of the clinical reports there is insufficient indication of the dosage given to the patients, so that one cannot tell whether there has been any attempt to arrive at the minimal effective dose for the individual patients rather than to give some constant dose to each patient purely empirically. Such a report as that of Kurzrok and others,[18] who observed persistent nausea and occasional vomiting in more than one-half of their forty patients, is open to this objection. The experience in France has been somewhat similar to that in the United States in that the first clinical report, that of Varangot,[19] laid heavy stress on the toxic manifestations, while the later reports, such as that of Huet, Comte, and Herschberg,[20] have in general accepted the new substance as a useful therapeutic agent whose toxic effects are slight and can usually be regulated by suitable adjustment of dosage. Huet and his colleagues found that only 10% of forty-six patients developed nausea, and the vomiting which occurred in 3% of cases cleared up rapidly on cessation of treatment.

There seems on the basis of the available evidence little objection to the use of stilboestrol in place of the

[11] *Med. J. Austral.*, 1940, **2**, 555.
[12] *J. Amer. med. Ass.*, 1939, **113**, 2312.
[13] Ibid., 2318.
[14] Ibid., 2320.
[15] *Sth. med. J.*, 1939, **32**, 813.
[16] *J. Amer. med. Ass.*, 1940, **115**, 2264.
[17] Ibid., 2266.
[18] *Endocrinology*, 1940, **26**, 581.
[19] *Presse méd.*, 1939, **47**, 725.
[20] *Gynécologie*, 1939, **38**, 517.

natural hormones provided that it is used intelligently. There is no point in giving larger doses than are strictly necessary, and each individual case must be studied to find out what is the minimal dose which will yield the desired result. Most clinical observers seem to be agreed that doses of more than 1 mg. a day are very rarely necessary, and that much lower doses are quite effective in a great many cases. The question of the toxicity of stilboestrol may, however, become a purely academic one if the preliminary data on the newer oestrogenic analogue hexoestrol given by Bishop and his colleagues[21] in the form of a report to the Therapeutic Trials Committee of the Medical Research Council are confirmed. Their findings indicate that the new compound, while not so active weight for weight as stilboestrol, gives rise to nausea and vomiting in a much lower proportion of cases. Its oestrogenic activity is in all respects similar to that of the natural hormones. It is hoped that the controversy on the toxicity of the new compound will be slight; so far no clinical reports have appeared except the one referred to above.

GAUGING CHILDREN'S PHYSICAL FITNESS

All workers in the field of child health are faced with the problem of finding an efficient, economical, and simple method of gauging physical fitness. The Children's Bureau of the United States Department of Labour has recently issued a valuable study on this subject,[22] in which Dr. Rachel M. Jenss and Dr. Susan P. Souther give details of a most interesting piece of work. Put briefly, the method adopted was the observation of over 700 white school children attending the public elementary schools in New Haven, Connecticut, from September, 1934, to May, 1936. These were 365 boys and 348 girls, who were first examined when they were 6 years of age. This examination included a physical examination by a well-trained paediatrician, anthropometric measurements taken by one anthropometrist, and certain social-economic data made at home visits by trained workers. A second examination was made a year later by the same paediatrician and anthropometrist, and in addition the boys and girls were weighed at intervals during the study. When the children reached 7 years of age a comparison was made between what may be termed clinical criteria and four selected indices of body-build, the object being to test the value of such indices in picking out children likely to be physically unfit. The clinical criteria were: clinical judgment of general nutritional status, need of medical and dental care, and an estimate of the child's gain in weight and change in arm-girth over the period of observation. The four indices chosen were: the "Baldwin-Wood index," the "arm-chest-hip index" (developed by the American Child Health Association in 1934), the "nutritional status indices" (based upon a fairly complicated score card), and the "Pryor width-weight tables." Each index requires certain special measurements and in most instances it calls for fairly complicated calculations.

This study indicates quite clearly that none of these indices is an efficient method of identifying children who, according to the clinical (and continuous) observations, are likely to be physically unfit. The indices proved neither sensitive nor selective, failing to pick out certain boys and girls clearly indicated by one of the clinical criteria to be in need of medical care or nutritional advice and assistance, and, on the other hand, sometimes picking out children passed as physically fit. But even with such clear failure of the indices the clinical aspect of assessment also comes in for criticism. The clinical judgment of the paediatrician who made the examinations was prone to considerable error, in terms both of the variability and of the stability of the judgment. It is certain that some measure of a child's growth, such as periodic weighing, and also some accurate knowledge of the child's dietary habits, are necessary adjuncts to the physical examination. It is to be hoped that this detailed and well-documented American study will clear the air and stop once and for all the wasted energy spent on pursuing any sort of magical index of nutrition. The assessment of physical fitness is probably much more closely related to *function* than to *structure* and not likely to be expressed in numerical form. Although the assessment of the state of nutrition by clinical examination is beset with many difficulties, as has been pointed out on more than one occasion by the leading public health authorities in this country, the American study under review suggests that it offers a better basis than pure anthropometry. Close co-operation between the clinician, the social worker, and the public health expert should make it possible to achieve some satisfactory standards of nutrition.

WAR FINANCE

There is a clearer idea now than was apparent during the last war that a Chancellor of the Exchequer should keep two main purposes in view when framing his proposals: first, that taxes must be collected to meet so far as may be reasonably possible the payments which the Government will have to make; and, second, that an important part is played by the same operation in restricting the purchasing power of the taxpayer and to that extent setting free goods and services for national use. If the private demands of the individual and the public requirements of the Government enter into vigorous competition, prices are forced upwards and we are on the road to that state of inflation which brings hardship to the individual and danger to the State. Sir Kingsley Wood has introduced a new principle into his Budget, which is deliberately aimed at restricting private consumption—namely, that the share of the taxpayer's income (that is, of his purchasing power) which the State can properly withdraw from his control can be increased if there is a reasonable prospect of some portion of it being returned to him in a few years' time. In operation its effect is that, to the extent to which the additional heavy burden of the income tax payable for 1941–2 arises from a reduction in the allowances, "personal," or in respect of "earned income," rather than from an increase in the rate of tax payable, the taxpayer will receive a credit against which he can draw after the war. The reduction in these allowances is such that the maximum amount of "credit" for this year is £65. The extension of the surtax to the field of total incomes between £1,500 and £2,000, which was foreshadowed in last year's Budget, has

[21] *Lancet*, 1940, **1**, 629.

[22] *Methods of Assessing the Physical Fitness of Children*. By Rachel M. Jenss, Sc.D., and Susan P. Souther, M.D. Bureau Publication No. 263. United States Department of Labour. Government Printing Office, Washington. 15 cents.

not been effected—presumably because taxpayers within that group have been sufficiently hard hit by the rise in the rates of the ordinary income tax. At the other end of the scale the reduction in the exemption limit and in the personal allowances will not only bring in a very large number (possibly two millions) of new taxpayers under contribution, but will also increase sharply the tax to be paid by those who hitherto have contributed only small amounts to the Exchequer. The Chancellor, and indeed the taxpayers concerned as well, are to be congratulated on the fact that last year a system of payment by deduction was successfully launched as regards persons in employment; probably without some such arrangements in force a large proportion of wage-earners, and many of the salaried classes, would now find it extremely difficult to discharge their half-yearly liabilities. The language of war finance speaks in terms of such vast sums that they seem to lose reality; it may suffice here to point out that, as compared with the estimates of the first Budget of last year, the anticipations for both expenditure and revenue were exceeded by about 15%, and that income-tax payers contributed the record sum of £524,000,000 to the total revenue. One sentence from the Chancellor's Budget speech may be quoted as bringing home the extraordinary demands which taxpayers now have to meet: "I may perhaps mention that excluding Excess Profits Tax and Excess Profits Duty, the increases in the taxation imposed since September 30, 1939, alone equal the total produce of all taxes in 1918, the last year of the last war." On the important question of possible inflation Sir Kingsley Wood was reassuring; what he referred to as "the inflationary gap" he regarded as reduced by his proposals and by the activities of the National Savings Movement and other causes to dimensions which, at any rate in the near future, could not be regarded as dangerous. Apart from what might be called the "compulsory savings element" in the income-tax proposals—and the absence of any increase in indirect taxation—the Budget contains nothing novel.

POST-OPERATIVE PERFUSION OF THE BILIARY SYSTEM

The various operative procedures carried out on the gall-bladder and extrahepatic biliary passages do not always give the perfect results that are desired. The factors leading to failure are by no means uniform, and they are by no means always clear. In some cases the failure may be due to the persistence of inflammatory or pre-calculous changes in the intrahepatic or extrahepatic duct system; in some it is due to calculi, debris, or biliary mud in some part of the system; while in others concomitant disease of the pancreas is the cause. But, in general, post-operative sequels are due to the absence of a normal duct system. In recent years various methods have been employed to ensure a better toilet of the biliary ducts, including duodenal drainage, ether lavage of the common duct, and the direct lavage of the biliary ducts post-operatively by means of a syringe attached to the drainage tube. All these procedures are of special value in cases where calculi can be shown by the cholangiogram. Dean Macdonald[1] has recently described a method of continuous perfusion of the biliary passages with the use of an intravenous apparatus. Fluid or antiseptic, which is heated, is introduced from the apparatus through a tube into either the gall-bladder or the common bile duct, percolates through the biliary system, and is returned through a duodenal tube. Relaxation of the sphincter of Oddi is secured by the injection of olive oil or magnesium sulphate, or both, by the inhalation of amyl nitrite, or by the use of nitroglycerin. The effect of the lavage can be determined by examination of the washings returned through the duodenal tube. The method is an ingenious one, and the apparatus includes a choledochometer for measuring the pressure in the duct system and the tone of the sphincter of Oddi. One obvious risk is that small calculi or debris may be forced into the biliary tree and be impacted in the smaller ducts. The author states that "irrigation is a simple office procedure and can be continued by the patient at home." Thus, after the patient has cleaned his teeth and gargled he now washes out his biliary system before setting out on his day's work! Much fuller investigation and trial of the method are necessary before it can be claimed as either safe or really useful.

[1] *Canad. med. Ass. J.*, 1940, **43**, 411.

INJURIES FROM INDELIBLE PENCILS

From time to time there are reports of injuries from indelible pencils. Although the cases recorded are few and far between—generally punctured wounds of the hand or eye—the consequences have now and then involved employers in litigation and considerable costs by way of compensation. In some countries, notably in Germany, special warning notices have been exhibited in offices about the need for immediate medical attention if indelible pencil wounds are sustained. In this country, a few years ago a demand was made for the abolition of the use of copying-ink pencils in Government offices—with what success we do not know. It is not an easy matter to substitute other and less toxic dyestuffs for those commonly used in indelible pencils, but research will probably overcome the difficulties. The most frequently indicted of the dyestuffs employed at present is methyl violet—a member of the triphenylmethane group of dyes, which includes crystal violet and brilliant green—which has recently become popular in the treatment of burns and wounds. The trouble with this valuable group of basic colours is that in high concentration they are powerful protoplasmic poisons. The use of methyl violet for duplicating work and on teleprinter machines is widespread and has not, so far as we know, ever been followed by troublesome effects on the skin of girls engaged in such work except for the inevitable staining, which can readily be removed by simple means. Workers engaged in the manufacture of methyl violet and similar colours are very rarely affected by the dyestuffs. In the grinding and mixing departments they are protected against the possibility of dyestuffs entering the eyes; but, in spite of intense coloration of the tongue and the ready recognition of dyestuffs or their derivatives in the urine, they do not suffer from any toxic symptoms. This immunity is due to the low concentration in which the dyestuff is absorbed. The situation is entirely different when the point of an indelible pencil enters the tissues and rapidly creates a localized zone of intense activity by highly concentrated dyestuffs. Then the filling substances (usually graphite) act as inert foreign bodies. The dyestuff at once begins to dissolve and leads, so long as the concentration is high enough to allow it, to necrosis of the cells with which it comes into contact. In a recent short review of the problem, with a description of two new cases, Mason and Allen[1] state that the skin and its appendages—connective tissue, fat, muscle, cartilage, and bone—may all be affected in regions where the concentration of dye is high. In such conditions blood vessels become totally necrotic and thrombosed; where the concentration is lower the necrosis may involve only the adventitia, while the media and intima may show round-cell infiltration and proliferation. Secondary

[1] *Ann. Surg.*, 1941, **113**, 131.

infection may, according to Ettore, be a factor in producing extensive necrosis of whole digits or phalanges.

The local signs of indelible pencil wounds may be slight. At the time of the injury there is some pain for an hour or so, and surrounding oedema. Pain, however, is not a prominent symptom even when the dye has become widely diffused. For a long time a purple exudate may continue to appear from the punctured wound. Incision to remove the "lead" is likely to lead to a refractory ulcer. General symptoms are not common, but according to one author 20% of cases have headache, malaise, anorexia, and general weakness. The general poisonous action of methyl violet is chiefly on the kidneys, but experimental toxicity experiments on mice resulted in congestion of lungs, heart, liver, spleen, in addition, the liver showing capillary haemorrhages and leucocytic infiltration. The treatment of these injuries is immediate complete excision, so that no stained tissue is left behind. The authors state that if this is done the wound can be safely closed with assurance of primary healing. The "lead," they state further, should never be picked out with forceps: this breaks up the foreign body and scatters bits of dye throughout the tissues. In late cases excision of stained tissues is recommended, the wound being left open and allowed to heal by granulation; but this may be impossible if bones, tendons, or other essential tissues are involved. It is important that such injuries should not be tampered with and that immediate surgical assistance should be obtained.

RECOVERY FROM TRICHINIASIS

Trichiniasis is one of the few diseases from which complete restoration to normal can never occur. Although not disabling, as poliomyelitis, for example, often is, its sequels are highly unpleasing to the imagination, since they consist in the harbouring of innumerable living parasites in muscle throughout the body. Unpleasant though this may be, a more important question is whether it has any permanent practical effect. The presence of large numbers of encysted larvae in the muscles might well impair function to some extent, unless some hypertrophy compensated for this; fortunately they produce no inflammatory changes which might otherwise result in a diffuse and crippling fibrosis. Recent sufferers from this disease in England will doubtless be glad to hear that according to Z. Bercovitz[1] there are no permanent sequels at all. He made inquiries about the subsequent history of seventy diagnosed cases, most of whom he actually saw at various stages after recovery from the original acute illness, while the remainder replied to written inquiry. In no case did any disability persist longer than twelve months, and the majority were quite well in much shorter periods than this, usually within one month. The complaint, when it existed, was always of muscular weakness and fatigue, aching, especially on exertion, or tenderness. Although these patients are so soon subjectively normal they have been found to react positively to skin sensitivity and precipitin tests for as long as seven years, and eosinophilia may also persist for long periods. There is, of course, no treatment which will attack the larvae in the muscles, but it is of interest that antibodies to the parasite are developed, and resistance to reinfestation is observed experimentally. The mode of action of these antibodies is peculiar, although it has parallels in other parasitic infestations. J. Oliver González[2] has recently studied it by immersing living *Trichinella* larvae in immune serum, or hyperimmune serum obtained from animals to which successive doses of living larvae had been administered, the effect of which is to enable them to resist doses of a size fatal to normal animals. The action of such serum is to produce a deposit about the oral opening, eventually obstructing it and causing death. When adult worms were placed in such serum, not only was an oral precipitate formed but similar deposits developed around the anal and vulval orifices. Serum from rabbits immunized by injections of an extract of larvae had the same effect on larvae but none on adult worms, from which it appears that there must be some antigenic difference between larvae and adults. These occlusive precipitates are evidently formed by interaction between serum antibody and parasitic secretions.

[1] *Amer. J. trop. Med.*, 1940, **20**, 849.
[2] *J. infect. Dis.*, 1940, **67**, 292.

PATHOLOGY OF CARDIAC PAIN

Some fifteen years ago it became generally accepted that the pathological basis of prolonged anginal pain (with greater or less shock) was thrombosis in a coronary artery leading to cardiac infarction. Further observations have, however, required a modification of this view. It has become evident that acute cardiac infarction is not necessarily precipitated by coronary thrombosis; where widespread narrowing of the coronary tree already exists, infarction may result from further obstruction by haemorrhage into the wall of the artery, or from reduction of coronary flow as a result of some general disturbance—as, for example, an operation. Moreover, coronary thrombosis may often occur without subsequent infarction if there is an adequate anastomotic circulation. Clearly, therefore, to infer the pathology of the different types of anginal pain is not so simple a matter as was formerly thought. An inquiry by H. L. Blumgart, M. J. Schlesinger, and P. M. Zoll[1] throws some light on these problems. A correlation was made in 355 cases between clinical and post-mortem findings. The coronary arteries were injected, radiographed, and dissected according to the method of Schlesinger. Schlesinger had previously shown[2] that in the absence of coronary disease anastomoses between the coronary arteries, though they exist, are not functionally important even in old age. In seventy-two cases one or more main coronary arteries were occluded or considerably narrowed, yet in none were there symptoms of cardiovascular disease. In all these it was possible to demonstrate a good collateral circulation which had compensated for the obstructed vessels; no infarction or fibrosis had occurred, and cardiograms when taken had been normal. In cases with effort angina as the primary symptom and without valve disease or hypertension, coronary sclerosis with complete occlusion of one or more arteries was always found, but in others with congestive failure and angina as an incidental symptom coronary sclerosis was absent. Sometimes anginal pain is prolonged, but is accompanied neither by the other clinical symptoms nor by the cardiographic changes of infarction. Blumgart and his coworkers have in such cases failed to demonstrate infarction post mortem. They suggest that the cause is thrombosis or other means of sudden arterial narrowing, or alternatively some event which greatly increases cardiac work; they use the term "coronary failure" for such attacks, which may, however, be followed by actual infarction and should therefore be treated by complete rest. Finally, in forty-five cases of acute infarction fresh coronary thrombosis or occlusion was absent in twelve; this last group showed old coronary occlusion: there was one exception—a patient with cerebral haemorrhage.

[1] *J. Amer. med. Ass.*, 1941, **116**, 91.
[2] *Amer. Heart J.*, 1938, **15**, 528.

CERTIFICATES BY MEDICAL PRACTITIONERS

G.M.C.'s WARNING NOTICE

At the request of the President of the General Medical Council we print below a Warning Notice as to certificates given by registered medical practitioners in their professional capacity.

1. The organization of the resources of the nation for the combatant service generally, for the supply of munitions, for the mobilization and use of labour, for public assistance, and for pensions, gives rise to a host of occasions on which registered medical practitioners are requested to sign certificates of fitness or unfitness for persons under their care. Such medical certificates, to be valid, must by law be signed by registered medical practitioners only, and this trust on the part of the State is dependent upon the maintenance of a reciprocal skill and good faith on the part of the practitioners.

2. The State is accordingly entitled to assume that a certificate signed by a registered medical practitioner is completely reliable and an honest and proper fulfilment of his obligation.

3. Unverified assertions made by the patient himself, personal opinions as to his fitness or unfitness for various forms of service, or for particular hours of work, and other statements not founded on a careful examination of the patient immediately before a certificate is given, or supported by ascertained facts or conditions, are not proper material to support a certificate signed by a registered medical practitioner as his testimony to facts within his professional knowledge.

4. It has recently been made to appear to the General Medical Council by information and evidence received from competent authorities that in a number of instances there has been a relaxation of the vigilance with which such certificates are being signed.

5. The attention of registered medical practitioners is therefore drawn to the terms of the Warning Notice issued by the General Medical Council with regard to the granting of medical certificates.

The Notice states that

"Registered medical practitioners are in certain cases bound by law to give, or may be from time to time called upon or requested to give, certificates, notifications, reports, and other documents of a kindred character, signed by them in their professional capacity, for subsequent use either in Courts of Justice or for administrative purposes."

The Notice further states that

"Any registered practitioner who shall be shown to have signed or given under his name and authority any such certificate, notification, report, or document of a kindred character, which is untrue, misleading, or improper . . . is liable to have his name erased from the Medical Register."

6. The General Medical Council desires to impress upon practitioners that any such certificate should be granted *only on medical grounds* and from the practitioner's personal knowledge of the health and physical condition of the applicant, as ascertained by him at the time of granting the certificate.

J. B. Gillespie and J. C. T. Rogers (*Arch. Pediat.*, 1940, **57**, 652), who record a personal case of enterogenous duodenal cyst in a boy aged 4½ years, state that in the nine previously reported cases the patients' ages ranged from the newborn period to 15 years. The recognition of the condition was due to early development of obstructive symptoms. In the newborn period a pre-operative diagnosis of pyloric stenosis was not infrequent. Vomiting had been the only constant symptom. Abdominal distension and vague discomfort occasionally occurred in the older patients. An abdominal mass usually in the upper quadrant has been the predominant physical finding. Of the recorded cases, including the authors', eight were treated by operation and four patients made a good recovery.

Local News

ENGLAND AND WALES

Fracture Treatment under Emergency Hospital Scheme

Mr. Ernest Brown, the Minister of Health, attended the annual meeting of the Central Council for the Care of Cripples on March 28. In the stress of war, he said, the "civilian" cripple, whose condition was due to accident or to one of the crippling diseases, must not be forgotten. He relied upon the Central Council, which had already done so much, to see that this vitally important piece of social welfare was not neglected. Turning to the arrangements for the treatment and rehabilitation of the war-injured, Mr. Brown said that under the Emergency Hospital Scheme nineteen special orthopaedic centres had been established in England and Wales, and to these the majority of serious fracture cases, military or civil, would be transferred. At each centre there was a skilled surgical staff—in one centre an American team of orthopaedic surgeons—and a physiotherapy department with trained masseuses. In addition facilities were being developed at each of these hospitals for physical training, games, and occupational therapy. It was realized that nineteen orthopaedic centres was not enough, and the Ministry was at the moment engaged in bringing into the fracture service a number of other hospitals at which there were surgical staffs competent to treat fractures. After the war some of the special hospitals would disappear as the buildings in which they were housed returned to their normal uses, but others would remain as a permanent addition to the country's orthopaedic services. The new hutment hospitals were not a collection of old Army huts, doomed to dilapidation in the course of a few years, but soundly constructed pavilions, built often in brick and concrete, and medical experts had assured him that they made excellent hospitals of which no country need be ashamed. He added that the Ministries of Health, Labour, and Pensions and the Department of Health for Scotland were in close contact over the question of the further rehabilitation of war-injured in the sense of training for a different job if the disability rendered it impossible for the man to resume his old occupation. He hoped that an announcement would shortly be made as to the proposed plans. At the business meeting of the Central Council Dame Agnes Hunt was re-elected President, and the Earl of Dudley and Sir Geoffrey Peto Chairman and Vice-chairman respectively.

Co-ordination of Tuberculosis Services

Regionalization for the tuberculosis services of local authorities was urged in a paper by Dr. G. Lissant Cox, central tuberculosis officer for Lancashire, at a recent meeting of the Joint Tuberculosis Council in London. The main points urged by Dr. Cox were that many local authorities are not large enough to deal adequately with the prevention and treatment of tuberculosis on modern lines, and that some form of combination or regionalization such as already exists in Wales is desirable throughout Great Britain. The county and county borough councils for tuberculosis schemes in England (leaving London out of account) deal with populations ranging from 50,000 to 2,000,000, and although all the authorities are supposed to have schemes similar in efficiency and completeness, this is not in fact the case. There are relatively small counties and boroughs with efficient schemes, but these have been fortunate in having a person of exceptional ability as director or an area with peculiar advantages, and in general it must be said that for so complicated and expensive a work of public health a large authority is in a position to provide a modern scheme more economically than is a small and poor authority. There is already ample legislation to enable local authorities to combine and form general committees or boards for carrying out their statutory duties, but there are only three such combinations in England, those relating to the areas of Staffordshire, Gloucestershire, and Warwickshire respectively, and in those areas the efficiency of combination has been demonstrated. Nine years ago the

Joint Tuberculosis Council recommended that rural areas with a population of 200,000 and urban areas with one of 300,000 could be managed by one whole-time tuberculosis officer with proper assistance, but, of course, the adequacy of areas differs with the aspect of tuberculosis work in view. For isolation, nursing, and some minor surgical treatment a small area may function quite well, whereas it could not function efficiently and economically for more specialized treatment—for example, for non-pulmonary disease, especially of bones and joints, for children and adults, or for major thoracic surgical work. Dr. Cox pointed to examples of regionalization, such as the Welsh National Memorial Association, which conducts the diagnosis and treatment of tuberculosis in Wales and Monmouthshire, and, in more general fields, the scheme of the British Hospitals Association and the Emergency Medical Service, with its twelve regions for Great Britain. These regions, however, do not lend themselves suitably to the purpose of tuberculosis areas, but Dr. Cox urged that some scheme of regionalization, with due regard to the areas of county councils, was highly desirable. Legislation will, of course, be required to enforce a combination of local authorities held to be too small to provide efficient schemes.

Tuberculosis in Shelters

At the same meeting Dr. F. R. G. Heaf presented a memorandum on tuberculosis in shelters. The series of recommendations which it contained, and which were accepted by the council, included the following: that the recommendations of the Horder Committee be carried out as soon as possible; that the provision of special shelter accommodation for the tuberculous in densely populated areas be encouraged; that a special effort be made to examine more frequently contacts of known tuberculosis cases using Anderson shelters; that all children be removed from Anderson shelters used by tuberculous persons; and that no tuberculous person be allowed to use a school shelter. Many of these recommendations, especially those for segregation, can only be applied during periods of comparative quiet, and the point was therefore stressed that action should be taken while it was possible to enforce regulations so that a certain adherence to order and routine may be expected in times of extreme emergency.

Reports of Societies

MASS RADIOGRAPHY AND TUBERCULOSIS

At a recent meeting of the North-Western Tuberculosis Society, held at the Tuberculosis Offices, Manchester, Dr. G. JESSEL, Consultant Tuberculosis Officer, Lancashire County Council, read a paper on "The Role of Mass Radiography in Tuberculosis."

Dr. Jessel said that the diagnosis of early tuberculosis still left much to be desired, despite the marked increase in *x*-ray facilities in recent years. This was largely inherent in the pathology of the disease. Radiography was only capable of recording the shadows of the moment, which might be characteristic of one or more diseases, and, in the case of tuberculosis, did not necessarily indicate activity. A full clinical investigation of suspicious cases was essential. Mass radiography could be carried out in several ways: fluoroscopy was the cheapest but did not provide a permanent record; miniature screen photography overcame this defect, but its use on a large scale necessitated special apparatus and very careful organization. Miniature mass radiography could provide, under favourable conditions, a rapid method of weeding out those who presented abnormal skiagraphic appearances, and these suspects should be referred to a tuberculosis dispensary for detailed investigation. Persons classed as healthy should be re-examined at intervals, especially in the so-called dangerous industries. Miniature mass radiography of entrants into industry, the Army, etc., had already been tried, and, subject to financial considerations and with certain reservations, might be more generally used as the necessary centres, apparatus, and personnel became available. Definite standards of technique and interpretation would be essential for comparable results of value. The interpretation should be made by teams of experienced radiologists and tuberculosis officers or chest specialists. The examinations should be regarded as part of a general health survey and should not be related in the public mind specifically to tuberculosis. The work should not be carried out at a tuberculosis dispensary, which should remain the centre for detailed examination of suspects.

Dr. A. K. MILLER referred to the economic aspect of this health survey, which would certainly throw workers out of employment, and on that account would probably meet with some opposition. Provision should be made for these unfortunates. Dr. J. CRAW said that of approximately 1,800 lead miners examined by mass radiography, 0.64%, who had previously said they were fit, were found to be tuberculous. Dr. WYNNE-EDWARDS said that experiments he had made so far with a Leica camera had been unsatisfactory owing to distortion. He added that mass radiography of Storm Troopers in Germany had revealed that 8% were tuberculous.

Wartime Problems of Tuberculosis

At the same meeting Dr. D. P. SUTHERLAND, Senior Tuberculosis Officer for the city of Manchester, spoke on "Some Observed Effects of the War to Date." He said that enemy action and E.M.S. requirements had caused a diminution of approximately 10% in the number of beds available. The general evacuation of the towns at the beginning of the war was, on the whole, probably beneficial; children, for example, were dispersed widely and were in many instances removed, at least temporarily, from heavily infected relatives. A later evacuation resulting from war damage to the dwellings of the tuberculous was unfortunately less innocent. There was danger of infection, as the dispossessed tenants were rehoused either in empty houses or in houses already occupied generally by non-tuberculous persons. Concentration and crowding resulted, not only in individual houses but in the immediate vicinity of the bombed town. The fact that the economic circumstances of the general population were now much better than for years might lead to improved nutrition and increased resistance to the results of infection. Rationing might, however, counteract this. The removal of so many cases from hospitals had been associated with an increase in notified cases so far. In a recent broadcast appeal for more nurses for fever and tuberculosis work the Ministry of Health had emphasized the danger of possible increase in the so-called infectious diseases; no less important was the danger from endemic tuberculosis. The difficulties of staffing sanatoria had been steadily increasing for years before the outbreak of war, and competition with Service requirements had since aggravated the position. There was a very large reservoir of trained staff waiting to deal with casualties as yet non-existent; they had nothing to do and were in most cases anxious to be usefully employed. In addition there were thousands of partly trained personnel, many of whom could be, but were unwilling to be, usefully employed in helping with the treatment and care of the tuberculous, who had great need of their services, preferring instead to do alternative work for which there was no call. As a result there was a diminution in treatment and isolation at a time when these things were most necessary.

In the discussion which followed Dr. Sutherland's paper members were unanimous that long hours in crowded munition works and loss of rest due to A.R.P. and Home Guard duties had resulted in the relapse of old quiescent cases. There were many "T.B. minus" cases in the Home Guard.

W. F. Burdick (*J. Pediat.*, 1940, **17**, 654), who reports ten cases in children aged from 3 weeks to 13 years, illustrates the rarity of peptic ulcer in childhood by the fact that out of 21,231 admissions to a children's hospital there were only 8 cases, 6 of which were duodenal and 2 gastric. He advocates a freer use of *x* rays in children suffering from anorexia, retarded growth, vague abdominal distress, and constipation. By so doing the diagnosis may be made before haemorrhage or perforation occurs.

Correspondence

Bureaucratic Surgery

SIR,—Those who work in the E.M.S. have for some time been receiving examples of medical bureaucracy in the form of instructions to do this or that, but particularly not to do this or that. Many consultants of long and varied experience have responded to these orders with a shrug of the shoulders and a rather unwilling compliance, in the very proper belief that they should always be loyal to the service which they conceived to be of such great importance to the community at this time. One of the latest orders, however, far exceeds any yet issued in its restrictions, for general surgeons are told not only that "all head injuries should be transferred to special neurological units" but that "the term 'head injury' includes scalp wounds in which there is no evidence of bone involvement." I suppose the implication is that the general surgeon is so dull that he may overlook the possibility of injury to bone or brain, while the specialist neurosurgeon is immune from such errors.

We have all of us in our time laughed at the story of the American dentist who had on his visiting card, "Specialist in the extraction of the right upper canine," but our hilarity was evidently misplaced, for it is obvious to anyone who thinks that there are special points about the relation of this tooth to the antrum, and about the dexterity required to remove upper right-sided teeth, which must demand specialized practice that could only be acquired by one willing to leave all the other teeth to similarly specialized treatment. What about dividing the scalp wounds into those of the right and left sides, possibly to be dealt with by right- and left-handed neurosurgeons respectively?

The question of extreme specialization is nevertheless too serious to be dealt with entirely by friendly banter. Having a mental make-up which makes it impossible for me to confine my interests to one small branch of surgery, I thought that my reactions to these many instructions were peculiar and individual, and I should certainly not have ventured to draw attention to the subject had I not found in conversation with colleagues that they were reacting in a like manner, and that a certain feeling of antagonism was arising which might easily affect the efficiency of the service as a whole.

It is, of course, clear that some degree of specialization is necessary, and I am not prepared to say quite where the line of distinction between the general consultant and the specialist should be drawn, but I feel sure that there are undesirable extremes in both directions. It is easy to understand how comforting it must be to those in charge to be able to forestall possible public criticism by the statement that all cases are in the hands of "specialists," but when this means, to take an example, transferring, say, cases of nerve suture from the hands of general surgeons having a big experience of such work in the last war to comparatively junior orthopaedic specialists whose experience is likely to be much less extensive, the apparent advantage to the public surely rests entirely in some hypnotic influence of the term "specialist."

By retaining the services of the staffs of the large voluntary and municipal hospitals the E.M.S. very wisely determined that the more senior members of the service should be men of wide experience and sound judgment (the most important of all surgical attributes for consultant and specialist alike), and it does seem rather derogatory to issue orders to men of such standing; surely the more acceptable method, when it is decided that some mode of treatment has given good results, would be to issue a pamphlet on the subject for the "information" of those handling the cases. On occasions the E.M.S. has adopted this policy, and those in the service have found the information provided very acceptable, but in the case of orders and instructions who is in a position to be his brother's keeper, who decides what methods of treatment are correct, and who demands that no other treatment shall be used? How could the world have received the benefits of the work of Lister, Horsley, Winnett Orr, and a hundred others if this dictatorial atmosphere had cramped their originality?

The question of the State control of medicine is now very much to the fore, and many who have felt an innate repugnance to the idea have recently been asking themselves whether their opposition was not merely unwarranted prejudice, and in consequence, recognizing virtues in such a system, their intransigent attitude has changed to one of tolerance, with possibly a slight feeling of shame at this betrayal of their natural instincts. But if State medicine is to mean bureaucratic control of the actual technical details of treatment and the complete exclusion of individualism of thought and action, it may be that as a profession, and in the true interests of the science and art of medicine, we should think again before accepting it.

Lest it be thought that this letter merely represents crabbing criticism and lack of sympathy with obvious administrative difficulties, I should add that I have been interested in the E.M.S. since long before the war started, and am anxious that the service should be as perfect as possible from the patient's point of view. This, I believe, can only be attained if competent surgeons are still allowed to retain their individuality and to come to their own conclusions as to the merits of any particular form of treatment, since otherwise their interest flags and their duty suffers accordingly.—I am, etc.,

London, W.1, April 6. NORMAN C. LAKE.

Rehabilitation of the Injured

SIR,—In your informative leader on rehabilitation of the injured (April 5, p. 519) reference is made to the Albert Dock Hospital as having a rehabilitation department for one class of occupation only—namely, seamen. This gives a rather erroneous impression. It is true that it is a branch hospital of the Seamen's Hospital Society, but it caters not only for seamen but for all workers in and about the Royal Docks, and these comprise ship repairers, stevedores, railwaymen, factory workers of many grades, millers, gas workers, office workers, and a host of others. Even if seamen alone were taken, each ship can be considered as a self-contained village with a number of different occupations practised by its inhabitants. In addition to the A.B.s there are firemen, greasers, marine engineers, refrigerating engineers, electricians, cooks, and clerks, and this list can be multiplied many times. The rehabilitation department therefore deals with a very wide cross-section of the working community, and the only way it differs from a general hospital is that it is concerned with men and youths only.

In addition to able-bodied seamen, stevedores, and firemen, those attending the department at the present time include ships' officers, clerks, a cook, an engine driver, a van-boy, a painter, some demolition workers, and men from a variety of other occupations, and it is because of the different types of employment to which the men have to be returned that it has been necessary to evolve a form of rehabilitation work which would cover all. Mr. E. A. Nicoll in his absorbingly interesting article (p. 502) emphasizes throughout the fact that he is dealing with a specialized type of work in the colliery district. His methods are designed to rehabilitate the men in particularly arduous labour, often undertaken in cramped conditions.

It would be very interesting to hear from him what the men's reactions are to the chart of their weekly progress. In the better type, I can believe that the chart would act as a stimulus to further endeavour, but in others I should imagine that by focusing the attention on the disability it is apt to induce a state of introspection and consequent inhibition of effort. My own efforts have always been aimed at distracting the patient's attention from the injured part, although in selected cases benefit is produced by deliberately training the damaged limb or back.—I am, etc.,

London, W.1, April 9. H. ERNEST GRIFFITHS.

Treatment of Burns

SIR,—The Dickson Wright method of treating varicose ulcers with tightly applied elastic adhesive bandages, and the closed-plaster method of Winnett Orr of treating deep bone sepsis, introduced a new conception into the treatment of localized septic wounds. The success of these methods of treatment

is due to certain underlying principles common to both. They can be stated briefly as follows: (1) Elimination of tissue tension. (2) The bactericidal effect of wound discharges retained in intimate contact with the wound. (3) The "cushion" effect of a fluid dressing on the wound. (4) "Protection" effect produced by local immobilization and infrequent change of dressings. (5) Beneficial psychological effect produced by freedom from pain and from the mentally disturbing effects of frequent painful dressings, anaesthesia, baths, or irrigations.

For the last twelve years I have employed these principles in general practice in the treatment of wounds, clean or septic, of abrasions of the skin surface, of boils and carbuncles, and also of burns and scalds. Here let it be quite clearly understood that I am dealing only with small areas of burns and scalds, so that the question of treatment by tanning methods to prevent secondary shock does not arise. The treatment now being discussed applies only to local burns and scalds, where the considerations that arise are: (1) the formation of a clean granulating wound that later can be allowed to heal by epithelization or by skin grafting; and (2) the comfort and convenience of patient, doctor, and nursing staff.

The leading article in the *Journal* of March 29 (p. 484) calls attention to the importance of the control of sepsis in burns. In the same issue (p. 469) Dr. J. M. Robson and Mr. A. B. Wallace advocate the use of glycerin–sulphonamide for its antiseptic properties. Others advocate the use of flavine incorporated in a tannic acid jelly, while others press the claims of gentian violet and other aniline dyes. I would here like to suggest an extended trial of the occlusive method of treating burns, using as a bactericidal agent that which I believe to be the best of them all—the seropurulent discharge of the wound itself. I see no logical reason why sepsis from a varicose ulcer, an infected bone injury, or from a boil or carbuncle should be treated differently from sepsis arising in a burn or scald. Within the limited scope afforded by general practice I have treated them on the same lines as I have treated sepsis elsewhere, and have never had cause to regret what I believe to be a 100% run of successful results. Excluding tetanus and gas gangrene, I believe the principles set out above apply to sepsis whatever the nature of the invading organism.

The occlusive dressing technique is simple. Vesicles, when present, are ruptured, but the overlying epidermis is not removed. The burned areas are swabbed with dry cotton-wool and gross contamination is removed. The surrounding healthy skin is shaved and cleaned with aether. meth. A piece of white lint is covered with a layer of any bland ointment (I use ung. resorcin. c. amylo) and placed over the wound so that its edges reach just beyond the margin of the wound. This is covered by strips of elastic adhesive bandage applied on the stretch two layers deep, the outer overlapping the inner layer, or the bandage may be wound in spiral fashion round a limb. This dressing is left *in situ* for seven to twenty-one days, being reapplied after recleaning the wound and its surrounding skin as before.

In this fashion a second-degree burn may be completely healed in three to six weeks, with perhaps only one or two changes of dressings. In the case of a third-degree burn a healthy granulating wound will be found ready for skin graft after two to three weeks. Apart from satisfactorily dealing with sepsis and the comfort of the patient, this occlusive type of dressing has the following advantages: (1) It is not bulky and it "stays put"; even when the feet and legs are involved in second-degree burns the patient is able to walk about in comfort after a few days. (2) There is a drastic economy in time to doctor, nursing staff, and patient. (3) There is a drastic economy in the use of dressing material. (4) The patient can usually return to useful work two or three weeks before the complete healing of the wound, providing he can manage to avoid subjecting the dressing to contact with water.—I am, etc.,

Derby, March 31. E. C. DAWSON.

SIR,—As an ignoramus on the subject I have followed with interest the oscillations of the experts who advise on the treatment of burns. Tannic acid, acclaimed as a life-saver a few years ago, seems to be going out of favour. Fomentations, specifically condemned in a Ministerial pamphlet some months ago, has received a recent word of commendation (Mowlem, *Proc. roy. Soc. Med.*, February, 1941, p. 221).

I would ask one question and make one comment. What became of the treatment by paraffin wax which had a considerable vogue in the last war? Those interested in the subject will find laudatory articles in both volumes of the *Journal* for 1917. With cessation of hostilities the method seems to have faded into oblivion.

The donor area from which Thiersch grafts have been taken has suffered many things at the hands of many surgeons. One shudders when one reads of sepsis developing under tannic acid treatment when experience has shown that perfect healing will occur under a sterile dressing of gauze and wool, left in position until the scab separates in the course of two or three weeks. Similar treatment will give good results in the case of a second-degree burn if the blisters are intact so that they can be cleansed and punctured, not cut away, with aseptic precautions.—I am, etc.,

Northampton, April 6. C. C. HOLMAN.

SIR,—I would advocate the use of paraffin No. 7 in the treatment of burns at aid posts. It gave good results in the last war, and I have found nothing better for domestic burns. It can be easily stored, kept clean, and has some antiseptic value. The melting of the wax should give reasonable asepsis. As it is applied warm, shock is minimized; it is a soothing application. Perhaps a safe percentage of novocain could be added. Anyone can learn how to apply it.

The teaching in E.M.S./Gen./343 will be confusing to first-aiders. They have been told to avoid carron oil and greasy applications, yet here is vaseline recommended; and the tubes of tannic acid jelly with which first-aid parties are provided are to be discarded. Whatever be the best hospital treatment, a practical and authoritative statement on first aid seems called for. How is vaseline to be sterilized and kept sterile in an aid post? Vaseline, like carron oil, can too easily become a menacing mess.—I am, etc.,

Gourock, April 5. GEORGE ADAM, M.D.

Tuberculosis in Wartime

SIR,—In the annotation on tuberculosis in wartime (March 22, p. 445) the commentator draws attention to the unsatisfactory features of institutional treatment of tuberculosis, and remarks that even before the war only an insignificant number of sputum-positive patients were discharged as quiescent. Surely this latter statement is a slip of the pen, for it is difficult to see how any patient with a positive sputum, however good his general condition and no matter how free from toxic signs he may be, can be regarded otherwise than as an active case of pulmonary tuberculosis.

In the review by Rusby and Heaf quoted by your commentator attention is again drawn to the large numbers of sputum-positive patients outside institutions who constitute "a vast pool of infection in the country." With wartime conditions prevailing it is inevitable that in the coming years we shall be faced with a grave increase in the incidence of the disease, and that the need for early diagnosis and effective and thorough institutional treatment will be even greater than before the war. Are we to regard these sputum-positive cases mingling with the general population at present as evidence of the failure of our anti-tuberculosis work and as a reflection on the efficiency of our scheme of treatment? Rather let us say that our hospitals and sanatoria have done their best with the clinical material provided and with the resources at their command.

If we look to the future, however, we must be driven to the conclusion that if we are to deal adequately with the cases of the post-war era a reorganization of our scheme will be necessary. Early diagnosis will remain the foundation stone of our edifice, and there will be little doubt among tuberculosis workers that mass radiography will provide the solution. Given early diagnosis, prompt use of collapse therapy will shorten the period of institutional treatment and should greatly diminish the number of sputum-positive cases, thus gradually eliminating our "pool of infection."

Is our present tuberculosis scheme adequate, as it stands, to deal with this problem, and, if not, what reorganization will be necessary? In certain areas the scheme administered by the local authority is admirable, in other areas most definitely not so admirable, and in our coming onslaught on

the disease uniformity will be essential. For this some form of central control, such as a National Tuberculosis Board, should be considered. Given our central board, we can work our scheme on a regional basis, with each region equipped with a central hospital where facilities for all forms of collapse therapy are available, and with a specialist staff employed on a full-time basis. From our hospital we pass to the regional sanatoria, which are intended for sanatoria and not, as at present, for sanatoria-cum-hospitals-cum-homes for incurables. Included in the scheme would be a rehabilitation centre and colony, for it is idle to suppose that in our "brave new world" we shall see nothing but early unilateral cases who one and all respond to a pneumothorax. In our shadow scheme we must also consider one other vital point—the education of the public—for without this our plans will most surely fail. The organization for this is in being in the National Association for the Prevention of Tuberculosis, which could be incorporated in the general scheme.

The cost of such a scheme as has been outlined would certainly be great, but, taking a long view, the results should more than repay the expenditure, and perhaps we might yet see the day when our sanatoria would come to occupy the same position as our small-pox hospitals do now.—I am, etc.,

Tor-na-dee, Murtle, March 26. R. Y. KEERS, M.D.

Collecting Casualties in Invasion: A Scheme for Kent

SIR,—The medical service of the Home Guard is at the moment in so fluid and formative a condition that even a few weeks' experience may be of interest to your readers. For some six weeks I have been the senior medical officer of this service in Kent, and as such responsible for its organization and character. Not until quite recently have I seen any Army Orders or other instructions which concerned themselves with this particular medical service, and I have good reason to believe that even now the authorities are far from anxious to lay down hard-and-fast rules which experience might prove to create more difficulties than they solved.

My first discovery was that there was practically no resemblance between the duties of a regimental medical officer and those of a Home Guard battalion medical officer. Such resemblance as there was concerned only their sanitary and training duties. When it came to dealing with casualties the resemblance abruptly ceased. There can be no question of establishing a single regimental aid post for a country battalion of the Home Guard, since it may be spread over a hundred square miles and have small detachments on guard at almost as many separate road junctions and other defence points within the area. The same difficulty has faced the medical officers of mechanized regiments, in which vehicles may at any time become very closely analogous to a Home Guard defence point. I do not know how the regimental problem is being solved, but it is evident that the Home Guard battalion has at least one advantage—that is, the area in which it will sustain casualties is limited by counties and not by continents. This fact is of no small importance.

Those who have followed the argument so far will probably say, "Well, where is the difficulty? There are air-raid wardens everywhere, who will ring up Control and have an ambulance sent out to take your casualties to hospital without requiring the services of a battalion medical officer." Those who still believe that this simple mechanism will surely be available during invasion are dangerous optimists. Whether invasion comes from the sea or the air, or both, it must be the first aim of the enemy to disorganize means of communication and so prevent the arrival of reinforcements. This must surely mean attacks of great strength on the neighbouring towns (including hospitals), and upon all roads, railways, and bridges. "In great strength" means something that we have not yet experienced in this country, but Rotterdam knows what it meant a year ago, and we should do well to learn its lesson. That lesson is clear enough. In areas affected by invasion we must arrange to disperse our casualties, or leave them dispersed, during the actual fighting, partly because we shall not be able to do anything else, and partly because it would be sheer murder to seek to aggregate them in vulnerable centres such as town hospitals and first-aid posts. I have found that those in the best position to visualize the possibilities of invasion heartily approve of the dispersion of casualties.

It did not take one very long to reach this conclusion, and the next step was to arrange for the reasonable care of casualties until it should be both possible and wise to send them to hospital. This could only be done by enlisting the assistance of doctors who could influence householders in their own districts. About forty Home Guard medical officers have now been enrolled in Kent. Most of them are battalion M.O.s, but some are responsible for groups of four to eight battalions, and others are associated with companies or even platoons. These officers and I have aimed at setting up casualty collecting posts throughout the county at such intervals from each other that it will not be necessary to carry any casualty more than one mile. No elaborate provision is or can be contemplated, but we hope to ensure that the injured shall have a roof over their heads, rest, warmth, simple cooking, and such skilled care as may be possible. We have a form which we hand to householders. The response has been extremely encouraging, and there are already a great number of casualty collecting posts in various parts of the county. In many instances it has been possible to arrange that a retired doctor or a dentist with a medical qualification shall take the responsibility of two or three such posts. In others the local doctor (who is often also the battalion M.O. or a member of the Home Guard) will look after them as best he may. A trained nurse is available for others, and there are many helpers with various degrees of training who are more than willing to assist in time of need.

Although the Home Guard medical officers are bringing these casualty collecting posts into being, their duties do not usually include attendance at them in emergency. Many of these doctors have their duty posts—for example, F.A.P.s, E.M.S. hospitals, and so on. The Home Guard medical service, as it exists in Kent, is in fact an administrative and not a treatment service. It is in this fact that it differs so strangely from the R.A.M.C. In this manner, within a very short period, we have gone far to ensure that no casualty, Home Guard or military or civil, shall be left neglected by the roadside or in some unsuitable cottage until the fighting is finished and road traffic resumed.

I should like to discuss the adaptation of this plan to towns, and also a hundred and one other points which have arisen, but many of these are more suitable for conference than print, and your space is too valuable for further presumption on my part.—I am, etc.,

GORDON WARD,
Senior Medical Officer, Kent Zone, Home Guard.

Sevenoaks, April 7.

Mobile Unit in Action

SIR,—Allow me to endorse Dr. F. J. Henley's final dictum in his letter on this subject (March 22, p. 458): "Use these units more and they will save more lives," but to whom does he or do we address this request? He asks whose specific responsibility it is in Southwark to send for the unit. I expect it is the same in Southwark as in this borough and all other boroughs: Controls call out the unit on the advice of the incident officer, if there happens to be one present, but more often on the advice of stretcher-bearers, or rescue party, or even a part-time warden. Surely these expensive units are worth more consideration.

We are told we are on the eve of invasion, when casualties may approximate to the figure which we were originally taught to expect; may we as medical officers of mobile units not plan so that we may be of more use? Local A.R.P. committees may not have used mobile units as much as they should, and perhaps rightly too, because except in a few cases the incidents have not been large enough to absorb all their functions, which were laid down very early by the Ministry as follows: (1) for trapped cases, (2) for urgent cases requiring treatment before removal, (3) as casualty clearing stations, (4) for improvising a hospital should hospitals and first-aid posts be destroyed. Except perhaps in the case of (1) and (2) most units (according to correspondents) do not appear to have been utilized. There is no reason, however, why we should not be prepared to act in these capacities, and A.R.P.

committees would be well advised to co-operate with medical officers of mobile units and so enable them to be ready for future action.

I suggest that the criticisms and suggestions made in the *Journal* by experienced M.O.s of mobile units might be met by some such scheme as the following:

(1) At each express message where casualties are reported the M.O., a sister, and the incident doctor's deputy (as suggested by Dr. Henley) should go out with an ambulance arranged as a resuscitation unit, as indicated by Dr. Peter Cardew (January 18, p. 100). If the casualties are few and slight the deputy through the warden gets in touch with Control and asks for the next incident. If the incident is of some magnitude, he calls out the unit, mobile van, etc., and he then works in conjunction with rescue and stretcher parties as Dr. Henley suggests: (*a*) sees that no casualty is carelessly handled; (*b*) sees that shock treatment is started and maintained as soon as the patient is at all accessible; (*c*) keeps account of the number of casualties rescued and number to be rescued; (*d*) acts as casualty clearing officer, directing ambulances to the various hospitals and first-aid posts and not all to the nearest hospital; and (*e*) affixes red, blue, and white labels to casualties according to severity of wounds, priority of treatment, and destination.

(2) Personnel of the mobile unit should be interchangeable with those of other units so that the staff of each unit can be easily augmented.

(3) The personnel of mobile units should be trained in the team work of improvising a hospital.

I should be glad to hear from M.O.s of mobile units so that a meeting may be convened and this scheme or a similar one embodying their experiences can be presented, perhaps through the agency of the British Medical Association, to the proper authority.—I am, etc.,

J. F. MACKIE,
London, S.E.22, March 27. M.O., Camberwell Mobile Unit.

A First-aid Timetable

SIR,—In pursuance of the idea and burden of your leading article of two weeks ago about the tendency to over-elaboration of first-aid work, I have a suggestion for instructors. It is that they set their description of any and every case, real or otherwise, against a time schedule—that is, they indicate what could and should be done within the periods of, say, half a minute, one minute, five, ten, twenty, and so forth. Within such a place as a first-aid post the staff might, through transport difficulties, etc., find themselves in the position of nurses, and would then have to do such work as the recording of temperature, pulse, and respiration, and repeat at intervals spread perhaps over longer periods still.

Thus: 1. *Immediate, Half-minute.*—Remove from electric contact; place in a posture favourable to respiration; close an open pneumothorax. (The first thing, of course, would be to observe whether there is unequivocal evidence of death.)

2. *One Minute.*—Haemorrhage: direct or digital pressure; throw a covering over to protect against chilling; tourniquet, if needed; examine for fractures if there is time, and apply, so far as possible, postural treatment for them, including the clavicle.

3. *Five Minutes.*—Splints to forearm and ankle; for worse fractures, place on a stretcher and remove the patient without splinting, though secured to the stretcher as firmly as time will allow; cover up burns if not already done.

4. *Ten Minutes.*—Count pulse and respiration rates in all cases of head, thorax, and abdominal injury (even though there be no external wound); examine for further wounds; put splints on major fractures; prop up in Fowler's position if necessary; dress burns.

5. *Twenty Minutes.*—If washing facilities are available and lotion, the wound, after first cleansing the surrounding skin, may be uncovered and inspected for foreign bodies and so forth; look out for and record signs of cerebral compression (specified in detail), internal haemorrhage, and peritonism; treat for shock and (controlled) haemorrhage by rectal injection of really warm 1/2% saline; hot bottles between the thighs and to arm-pits; examine badly crushed limbs for evidence of vitality (colour, temperature, and pulse to be felt); and be prepared on medical instruction to apply a tourniquet if the state of the limb is so bad as to prejudice the well-being of the injured man.

The above may be found suggestive; it could obviously be elaborated and improved on.—I am, etc.,

W. REGINALD WILSON,
April 6. M.O., First-aid Post, Doncaster.

Radiological Diagnosis of Peptic Ulcer

SIR,—In base hospitals and elsewhere all over the country numbers of H.M. Forces suffering from gastric symptoms are being examined radiologically. This provides a suitable opportunity to assess the value of the radiologist in this field and also to define his responsibilities.

Enlightened criticism has recently been directed against a tendency on the part of physicians and surgeons too readily to accept a radiological report. Dr. Charles Newman at a meeting this week reminded us that a "coin in the slot" attitude towards a radiological diagnosis can be most pernicious. As a radiologist I heartily endorse this. This attitude, however, is part of a vicious circle. Too little responsibility has in the past been placed upon the individual radiologist. A patient is sent for examination, a report is received, and the physician notes what "they" in the *x*-ray department have to say. Sometimes, happily infrequently, a picture or two of the stomach is considered sufficient. Seldom, however, even when the report is particularly nebulous, is the radiologist charged with the case and cross-examined as to the true significance of his findings. As a result it is little wonder that reports often take the form of a brief stereotyped formula, which irritates the physician and may convey to him little useful information.

The duodenal ulcer is a case in point: the search for this lesion requires the most precise and meticulous observation, yielding evidence of almost every stage of inflammatory change and of the sequelae of healing. A precise interpretation, or at least a statement of the probabilities when the findings are abnormal, should be demanded of every radiologist who undertakes a barium meal. In demanding it, the physician on his part will gain a better appreciation of the scope of radiology, of its ability to give more valuable information than much that is given now, and also of its limitations; while a reasonable share of the responsibility would be a healthy stimulus, welcomed by all radiologists who are prepared to stand or fall by the value of their work.—I am, etc.,

London, W.1, March 29. A. M. RACKOW.

Dyspepsia in the Services

SIR,—As a sidelight on the prevalence of dyspepsia in the Services—and among the civil population from whom they are recruited—I had a conversation some time ago with a member of a firm of retail chemists who own about a dozen shops in an industrial area. He asked me to guess the amount of alkaline powder sold by his firm each month. In putting the figure at a couple of hundredweight I imagined I should be well outside the mark. To my surprise he said that the amount averaged about half a ton per month.

It would be interesting to know to what extent digestive troubles are *post hoc* or *propter hoc* if this is any indication of its consumption over the whole country.—I am, etc.,

Brookwood, Surrey, April 5. H. M. STANLEY TURNER.

Medical Planning Commission

SIR,—It appears to me that the solution of this problem is comparatively simple. Two main essentials stand out: (1) the planning should be started as soon as possible; (2) the younger members of the profession must have a say in the matter, as they are the ones most concerned. Let the present commission get to work now and commit their proposals to paper. After the war the present commission should resign and a new commission be elected on which the youth of the profession would be fairly represented. This new commission could then review the findings of the original commission in a comparatively short time, as most of the spade-work would have been done.—I am, etc.,

Newbury, April 8. H. WARBURTON LEWIS.

SIR,—I am desired to notify you of the following resolution which was passed at a recent meeting of this committee after discussion had taken place on the objects and constitution of the Medical Planning Commission: "This committee dissociates itself, in advance, from any findings of the Medical Planning Commission as at present constituted."

For your information I am also desired to say that in framing the above resolution this committee had in mind the following points: (1) No scheme for a medical service which does not secure the agreeable acceptance of the general practitioners is likely to succeed. (2) The general practitioners have the power to enforce their will if they are united in purpose, know what they want, and shout loudly enough for it. (3) The way to oppression and depletion is waiting to see what will happen and doing nothing. Some aggressive policy must be adopted and energetically proclaimed. (4) Our chief potential enemies are those of our own household, the principal menaces being: (*a*) the growing insufferable powers of medical officers of health; (*b*) the envious hungry glances of consultants towards the National Health Insurance Funds. (5) We must urge on the Minister of Health that the general powers of co-option which are conferred upon local authorities by the Local Government Act, 1929, and which enable them to appoint representatives of the medical profession on the Public Health Committees, should be made compulsory instead of permissive, as at present, and that the local Medical and Panel Committees should have the right to nominate such representatives.

To sum up, there are two cardinal principles for which we must fight: the maintenance of a living wage and freedom from interference; in other words, liberty.—I am, etc.,

G. GILBERT GENGE, Hon. Secretary,
April 10. Croydon Medical and Panel Committee.

Calcium Requirements

SIR,—Dr. I. Harris and Messrs. Ireland and James (January 11, p. 49) have made a careful review of calcium metabolism and the many unsolved problems connected therewith, and consider that there is no evidence of calcium deficiency in the country. I have lately perused a group of modern papers on the subject, mostly from the U.S.A., kindly supplied me by the librarian of the B.M.A., and find that though there is plenty to say, conclusions are as dogmatic as they are contradictory. This seems odd considering the amount of chalk and lime in the world, especially in Southern England, and that rickets has been called "the English disease," and that the triumph of vitamin D has been one of the marked advances in preventive treatment during the last two decades. The recent correspondence in the *B.M.J.* shows difference of opinion on the subject. Certainly the clinical evidence of calcium deficiency is difficult to come by notwithstanding Sir John Orr's statement that the vast majority of the population suffer from this insufficiency.

I can only approach the subject as a clinician; estimations of serum calcium are not possible for me, and my patients are comparatively few. I come from Thanet, near the North Downs, where the condition of our water pipes, unless the water is softened, is enough to prove that there is plenty of calcium if the body metabolism is ready to take it up. However, I have decamped to Devonshire for obvious (not calcium poisoning) reasons, and here there is very little calcium in the water. The amount in the North Down waters averages about 20 parts per 100,000. In the surface moorland water supply of North Devon it is only about 4, half of which is calcium carbonate. (The analyses I have looked up in Thresh, Beale, and Suckling's *Water Supplies*.)

In the area where I am now practising the water comes from Exmoor. The local hotels and lodgings are full of schools, mothers with small children, and delicate people, mostly from areas where calcium has been abundant. Now the symptoms of calcium deficiency are said to be: poor circulation, chilblains, depressed heart action; fatigue and nervous irritability, even tetany; catarrh and asthmatic symptoms; and, presumably, bone softening when the deficiency has gone on long enough to deplete the calcium reserve stored in the bone cells; dental caries, etc. All through this winter of wet rough weather severe long-lasting colds with bronchial catarrh and spasm have been very frequent among these people. There has been asthma, but not acute cases. Fatigue is obvious, perhaps to be accounted for by steep-hill walking, and also by "summer time" in winter. The children have lost weight in spite of cod-liver oil, etc.

I have seen no tetany, facial spasm, or bone softening. On the other hand, the local children are free from rickets; the dentists do not complain of overwork and their reports are satisfactory. I do not know what local physical signs to look for indicating parathyroid underaction or atrophy. Yet it seemed to me only wise to put the patients on wholesale lime-water, which they make for themselves at home with slaked lime and tap-water, and I am bound to say that on the whole it has been a great success. The colds and catarrh at all events have cleared up more quickly and the children are putting on weight. I should much like to know whether lime-water is an easily absorbable sort of calcium: if not, my observations are merely wishful thinking. In some cases where I have thought the deficiency was urgent I have ordered calcium lactate for fourteen days, but I have not injected calcium gluconate, which I understand is the best method of introducing rapidly the missing element.

If I am correct in my treatment and observations the administration of calcium should be of value to those attending evacuated persons in Devonshire, especially the children.

I am not at all clear how calcium gets into vegetables, eggs, meat, etc., except through water. The original calcium here in North Devonshire has been metamorphosed into quartzite, etc.—I speak under correction—and is insoluble; there is none on Exmoor, where analysis shows that the water is very soft. On the other hand, how is it that the local children have no rickets? They do not eat much, if any, fish, unlike the children of the Hebridean islands with their herring diet; and their teeth are not in trouble to any marked extent. It may be that the body has an amazing capacity for taking up what it wants from a very meagre supply. Perhaps we over-regard the quantities in our dietaries and do not investigate sufficiently the more important problems of assimilation after digestion, thinking too much of our treatment and not enough of how Nature works, reacts, and defends herself.—I am, etc.,

Mortehoe, April 9. H. M. RAVEN.

Vitamin B_1 in Diphtheria

SIR,—Dr. Duncan Leys's criticism (March 29, p. 495) of our paper on vitamin B_1 in diphtheria (March 8, p. 359), the value of which can be assessed by the fact that he apparently has not taken the elementary precaution of carefully reading what he purports to criticize, affords us an opportunity of amplifying our previous statements. Naturally in an article presented for publication it is impossible to give very full particulars of the cases used in the experiment, and we trusted that this necessary pruning would not detract from the value of the article for the average intelligent reader.

We would first of all like to point out that Dr. Leys's statement that "none of their control cases appear to have had heart failure at all" is incorrect, since control case No. 2 is definitely mentioned by us as suffering from heart failure. Moreover, control case No. 10 developed a bradycardia on the twenty-fifth day, a fact which apparently had no significance for Dr. Leys, thus indicating that he is probably unaware of the importance of bradycardia in diphtheria. Secondly, his statements on tests Nos. 9 and 12 show that he has missed the whole point, as these cases were used to try out the curative effect rather than the prophylactic action of vitamin B_1; as there was nothing unusual in the rate of recovery there was nothing to remark about it. He states that we do not mention how long after treatment death occurred in test No. 7. The article shows that despite fourteen days' intensive treatment with the vitamin the patient died. As a matter of fact the patient developed gallop rhythm on the thirty-third day of the disease and died on the forty-first day.

We feel that Dr. Leys is trying to draw a red herring across our path by introducing other toxic states. May we remind him that our article was not on other toxic states but on the value of vitamin B_1 in diphtheria. Consequently there is no need for us to express our views on the value of the vitamin in these other conditions. We suggest that his own two cases

prove nothing: he does not even mention that they were cases of diphtheria; they could, from his letter, be due to other toxic conditions; the dosage of the vitamin is not given; he did not mention whether the vitamin was given before the appearance of the symptoms or after—if before the symptoms, this shows that the complications appeared despite the vitamin B_1; if after the appearance of symptoms, he is doing what he blames us for doing in some of our cases. There is no proof that the recoveries were not due to the other treatment; his numbers are too small and he had no controls.

It is a fact that if a therapeutic agent is really good it quickly and universally establishes itself, but despite the number of years that vitamin B_1 has been tried for complications of diphtheria there is no sign that this stage has been reached.—We are, etc.,

G. E. DONOVAN,
Health Department, Gorseinon, Swansea.
M. BANNISTER,
Royal Infirmary, Worcester.

April 4.

Antiseptic Snuffs

SIR,—I read with much interest the article by Drs. M. E. Delafield, Edith Straker, and Prof. W. W. C. Topley (February 1, p. 145) on a proposed method of applying chemotherapy in nasal infections. The use of snuffs might be very useful, but the formulae suggested are dangerous. I would refer the authors to a report by I. H. Erb, pathologist to the Hospital for Sick Children in Toronto, on lycopodium granulomata. It will be found in *Surgery, Gynecology and Obstetrics*, 1935, **60**, 40. Lycopodium was used as a dusting powder for rubber gloves in that hospital until several cases of granulomata, at least one of which caused intestinal obstruction and another involved the maxillary antrum, were discovered. If the small amount of lycopodium spores derived from a surgeon's gloves could cause tumour formation in an antrum, what might be expected from a snuff each dose of which would carry many times the quantity accidentally applied in the operation? It would not be unreasonable to fear lycopodium granulomata in the lung.

Nor is magnesium carbonate much better. A series of cases cited by McCormick and Ramsay in the *Journal of the American Medical Association*, **116**, No. 9, March, 1941, showed serious reactions in the peritoneal cavity due to the adherence of talc (magnesium silicate) on surgeons' gloves. The idea of the use of snuffs is good and the bacteriological studies are convincing, but I respectfully suggest that the vehicle used fulfil the ancient admonition "primam nolle nocere."—I am, etc.,

Toronto, March 8. MALCOLM H. V. CAMERON.

Chemotherapy in Acute Otitis Media

SIR,—Although fully conscious of the honour of Mr. Lionel Colledge's interest (March 22, p. 455) in my article on chemotherapy and conservatism in acute suppurative otitis media (March 15, p. 399) and appreciative of his kindly if somewhat sombre warnings, I have more than a faint suspicion that he wrote with his tongue in his cheek. Were it not so, to call conscientious clinical investigation, however modest, "looking for trouble" would appear to be ungenerous, and reminds one of the execrations showered on the heads of a band of recalcitrant "trouble-seekers" who dared to do as Hunter advised Jenner, "Don't think—try"—to name only a few: Jenner, Lister, Simpson, and Mackenzie.

Perusal of the case-sheet reports and of the discussion makes it clear as to the offending organism, but absence of "streptococcal" in the conclusions may justify the reminder of the pneumococcus and the *Staphylococcus aureus*. With the recent great advance in our knowledge of the action of sulphanilamide derivatives the reminder is not material. It would be interesting to know whether it was Mr. Colledge's innate kindliness which led him to omit mention of the tubercle bacillus, which may be the primary cause of suppurative otitis and which definitely gives no response to this therapy.

As to bacteriological investigation, I agree that it should be done when and where possible, in the absence of or in confirmation of clinical findings, but that ideal is seldom attainable in a rural district miles from the nearest laboratory where the bacteriologist is not always available. Further, the time factor is all-important; just as with clinical diphtheria and cerebrospinal fever one dare not wait for isolation of the Klebs-Löffler bacillus and the meningococcus, so with acute suppurative otitis media the application of chemotherapy should not depend on the existence of a discharge from a drum ruptured either spontaneously or by incision.

I note that in the case quoted of the nurse with acute pneumococcal suppurative otitis media, "when it appeared as though a mastoid operation could scarcely be avoided," the condition responded satisfactorily to suitable chemotherapy without surgical measures. I could ask for no more complete confirmation of my thesis. With full laboratory facilities at his immediate disposal it surprises me that no typing of the pneumococcus was done with a view to more appropriate treatment—by chemotherapy appropriate to the special strain. In the second case quoted no mention is made as to close supervision, repeated examination, and the multiple safeguards upon which must depend the decision as to whether conservative treatment may be proceeded with safely. Any humiliating experience which I may meet should be no worse than that which the aural surgeon meets (but may not recognize as such) almost daily in his awkward necessity to carry out paracentesis in the same drum repeatedly or to follow one mastoidectomy with a second in the same ear.

The initial anxiety, which was associated with only the first two cases and which soon became one of pleasurable anticipation, was a natural and healthy reaction, and was no more than one would expect in Mr. Colledge if he were trying out a new technique, say, in paracentesis or any sculptural effort.

The trifling analogy is, I feel, entirely facetious, but I must confess to having exposed myself to the alluring if demoralizing influence of Ireland on a few short visits. As to my abandoning my so-called defiance of established indications for incision of the tympanic membrane, the complete non-existence of these is proved by a recent discussion on the "Causes of Failure in the Treatment of Acute Otitis Media" recorded in the Section of Otology (of which Mr. Colledge is president) in the *Proceedings of the Royal Society of Medicine* (February, 1941, p. 225).—I am, etc.,

Malvern Link, April 3. J. B. JESSIMAN, M.D.

Convulsions under Anaesthesia

SIR,—Dr. H. A. Logan (March 29, p. 480) makes no allusion to hyperpyrexia as a possible cause in his interesting account of a case of so-called ether convulsions. No mention is made of the temperature at the time of operation or for twelve hours after, and so presumably it was not taken, or not for some hours after the convulsions had ceased. In view of the prominence given to hyperpyrexia as a cause of ether convulsions in the discussions in these columns recently it seems a pity that this was not done. It was suggested, I believe by Mr. Hamilton Bailey, that such a measure is impracticable, and so it probably would be at the height of severe convulsions. However, if the temperature be taken as soon as the convulsions abate, or, if necessary, when the operation is concluded, the observation should still be significant as the body is unlikely to have cooled unduly.

A brief description of a case of anaesthetic convulsions which I observed recently may be of interest. Male aged 18, retrocaecal appendicitis. Temperature just before operation 102° F. No abnormality detected in the chest on routine examination. Gas, oxygen, and ether anaesthesia induced with Boyle's apparatus. Generalized symmetrical jerkings of the limbs and trunk started some ten minutes after the peritoneum was opened and when the patient was in full surgical anaesthesia. The theatre was very warm and the patient extensively covered with mackintoshes, towels, and blankets. Most of these were removed and as much of the patient exposed as was consistent with the maintenance of surgical asepsis. Evipan was prepared for injection, but as the surgeon was not grossly inconvenienced and was able to complete the operation rapidly it was not deemed necessary to give it.

At first the convulsions increased and were very violent for a minute or so, then gradually died down and finally ceased

some twenty minutes after their onset and after ether administration had been stopped and the excessive coverings removed. At the end of the operation the rectal temperature was 104.5° F., and it is probable that it was higher before measures were taken to "cool off" the patient. Further progress was uneventful.

It is not inconceivable that the high temperature in cases such as this might be the result rather than the cause of the convulsions. Other observers may perhaps have the opportunity of obtaining a temperature reading at the onset of the convulsions should their severity or the nature of the operation not prohibit this. Nevertheless, a reading of the temperature immediately the circumstances allow is of value in that it may help to show whether or not hyperpyrexia is always associated with these convulsions—an observation apparently not yet fully established.—I am, etc.,

South Shields, March 29. J. B. KINMONTH.

SIR,—Dr. Logan gives a very helpful account of a typical case of what is known as "ether convulsions." I have been interested in this condition for about twenty years. As Dr. Logan suggests, no real cause has yet been found, all manner of theories have been put forward, and almost every kind of treatment has been tried or recommended. There are, however, two points which emerge, and which I think are accepted as constant. First, the condition is nearly always connected with an attack of appendicitis in a young person. Secondly, the convulsions never come on before the anaesthetic has been in progress about twenty minutes.

The only satisfactory treatment of this condition is preventive. Side-track the ether as soon as induction is over and carry on with nitrous oxide and oxygen; whichever way we look at the condition, ether is toxic and nitrous oxide is not. I am somewhat suspicious of atropine, which seems to have been used in nearly all the cases reported; I use less as time goes on. A second convulsion, as Dr. Logan mentioned, is not very uncommon.—I am, etc.,

J. B. H. HOLROYD, M.R.C.S., L.R.C.P., D.A.,
March 29. Anaesthetist, Sheffield Royal Infirmary.

Cyclical Mucosal Ulceration

SIR,—I notice a rather unnecessarily sarcastic letter from Dr. M. H. Pappworth (April 12, p. 573) which did *not* reply to my letter and question. The point is that Dr. Pappworth has not answered my query, and one must assume that blood examinations were not made, and if they were made that an eosinophil count was not done. One must therefore assume that this publication was made without full investigation, which, I suggest, should be done before decrying friendly criticism.—I am, etc.,

Liverpool, April 14. J. BERNSTIEN.

Outbreak of Gastro-enteritis

SIR,—The outbreak of acute gastro-enteritis described by Lieut.-Colonel A. H. D. Smith and Captain D. J. Davies (April 12, p. 554) resembles a similar epidemic that occurred in this county in the same period of 1940. The characteristics were: (1) abruptness of onset; (2) rapidity with which successive members of families were affected; (3) the short course of the disease. Owing to this short duration and absence of unpleasant sequels the disease appeared to be unworthy of the title "gastric influenza." One was inclined to accept it as an act of God or of the King's enemies, and to await the next *crise de guerre*.—I am, etc.,

Sherborne, Dorset, April 13. J. WHITTINGDALE, F.R.C.S.

Nitrous Oxide for Dental Anaesthesia

SIR,—I have administered "straight N_2O" in some hundreds of dental cases during the last thirty-three years. I am driven to the conclusion that the war product differs considerably in its effects (and possibly in its method of production) from pre-war nitrous oxide. Briefly, I have noted a prolonged period necessary for induction, shallow and slow respiration, no stertor, an analgesia rather than an anaesthesia, and, worst of all, a marked delay in recovery often with syncopal symptoms. My technique has not varied: different apparatuses have been tried. Incidentally all apparatus has been checked by N_2O experts, who can offer no explanation. Other local doctors have experienced similar effects. It would be interesting to know whether any of your readers can account for the phenomena and suggest a remedy.—I am, etc.,

Petts Wood, April 4. B. RICHARDSON BILLINGS.

Albinism

SIR,—The cases of albinism reported by Dr. Edward Christianson under "Clinical Memoranda" (April 12, p. 556) will be of interest to all those who may concern themselves with the condition. This note is merely to suggest that the monograph on albinism by Pearson, Nettleship, and Usher from the Department of Applied Statistics, University College, London, should have been included in the bibliography. Therein will be found a number of cases described by me among dark-skinned natives of Africa; others are the subject of an article in *Biometrika*, 1913, **9**, Nos. 3 and 4, 333.—I am, etc.,

London, W.1, April 12. HUGH S. STANNUS.

Malignant Measles?

SIR,—With reference to Dr. Audrey Baker's letter (March 8, p. 380) dealing with a so-called case of malignant measles, I am in agreement with Dr. Geoffrey Goodwin's suggestion (March 22, p. 462) that this was a case of suprarenal haemorrhage, or, in full, a fulminating meningococcal septicaemia or Waterhouse–Friderichsen syndrome. A good description of a typical case is given by Dr. James F. Hughes in the *Journal* of September 14, 1940 (p. 353).

In a series of 300 cases of cerebrospinal fever admitted to the City Isolation Hospital, Cardiff, during 1940 I saw at least six cases of this nature. The outstanding features were the sudden onset, multiple petechiae and often ecchymoses, and a rapid pulse of low tension imperceptible in some cases, meningitic signs being absent and the cerebrospinal fluid clear in the early stages. In one patient the medical superintendent, Dr. Emrys Harris, was able to demonstrate numerous meningococci in a stained smear of the centrifuged deposit of a haemolysed specimen of blood.

There is profound toxaemia, and the haemorrhages into the suprarenal glands produce a very marked lowering effect on the blood pressure. Unless these are immediately combated with the administration of intravenous saline, together with sodium sulphapyridine soluble, and a suprarenal cortical extract, the prognosis is hopeless and death may occur within a few hours. Three patients, with an imperceptible pulse on admission to hospital, made a good recovery when treated on the lines indicated.—I am, etc.,

D. TREVOR THOMAS,
Swansea, April 1. Medical Officer of Health.

Crush Injuries

SIR,—Dr. S. W. Fisher, H.M. Medical Inspector of Mines (April 5, p. 534), asks for information on crushing injuries in mines. The Medical Research Council has also been seeking such information for many weeks but so far without success. Prof. H. A. Harris, however, hints in his letter (March 29, p. 491) that he is familiar with this type of injury in the coalfield. It would be helpful if he could document his experience for the sake of the common weal.

In the study of a syndrome such as this facts must be marshalled as carefully and completely, and in these days as rapidly, as possible. No useful purpose can be served by loose thought based on inaccurate and incomplete reading of the data followed by vague ideas about colostrum, birth injuries, and uric acid infarcts. On the other hand, any available *facts* concerning the clinical course of crushing injuries, or the development of renal failure in other types of injury, would be welcomed by those of us who are concerned with the provision of accurate and helpful information.—I am, etc.,

J. MCMICHAEL,
Secretary to the M.R.C. Subcommittee on Traumatic Oedema.
British Postgraduate Medical School,
W.12, April 14.

Discission of Secondary Cataract

SIR,—Most ophthalmologists at some time or other have found difficulty in dealing with an after-cataract by means of a needle or a Ziegler's knife. The difficulty is in getting a *point d'appui*, and the fibrous membrane often simply moves in front of the instrument and is neither torn nor cut. Mydricaine is well known as a powerful mydriatic which does its work efficiently without raising the tension, but it is not sufficiently recognized that if 2% solution of cocain. hyd. is instilled, and after an interval of three or four minutes a subconjunctival injection of 5 minims of No. 2 mydricaine (Moorfields) is given, the discission can be done easily. The membrane becomes taut and the operation then presents little difficulty.—I am, etc.,

Wanstead, E.11, March 28. FRANCIS E. PRESTON.

Pulmonary Oedema

SIR,—With reference to the annotation (March 22, p. 447) on Luisada's view of the reflex origin of acute pulmonary oedema, may I point out that the idea is by no means a new one. It was put forward, for example, by S. Wassermann in the *Wien. Arch. inn. Med.*, 1933. The earliest reference I can find is nearly thirty years old. In the *Lancet* of May 27, 1911, A. E. Carver gives an admirable and detailed description of two cases, and concludes that certain features observed in these cases "raise the question whether reflex vagus stimulation was not a factor in determining the onset of the attacks, and this element of nervous influence would account for the beneficial effects of treatment with morphine and chloroform, an experience which coincides with that of other observers in similar cases."—I am, etc.,

Paignton, March 31. ATHELSTANE HILL.

Medico-Legal

MURDER OR ACCIDENT?

The medico-legal evidence decided the question of guilt or innocence in a recent murder trial.* A woman had been found lying on her back in a bedroom. There had been a small blood-stained area on the carpet, and the body had various bruises and abrasions on the scalp, forehead, left eye, arms, and legs. Pressure had been applied to the tissues of the neck; some of the abrasions looked as though they might have been caused by finger nails. Her upper denture had two teeth broken recently, probably by a blow in an upward direction. Her husband was put on trial for her murder.

Prof. John Glaister gave the opinion that she had died of cardiac arrest during asphyxia. The character and distribution of certain of the injuries, particularly on the neck and arm, he considered to be inconsistent with self-infliction or accident. Although, if the injuries were taken individually, many of them were quite consistent with accident, yet if they were taken collectively he could not account for them in that way. Cross-examined, he said it was highly improbable that the bruises on her arms were caused by a clumsy attempt to lift her from the floor on which she was lying face downwards. She had taken a large quantity of alcohol not long before her death—nearly a whole bottle of whisky. She was probably very drunk, and if she fell might lie in a helpless and comatose condition. He agreed that in that condition she might be more liable to sudden cardiac collapse than if she had been sober. In answer to the judge, Lord Wark, he said he thought the pressure to the neck had been applied by human hands and could quite easily have been applied from the front with the right hand. Her condition, if she was unused to alcohol, would have tended to coma rather than to violence, but she might have needed restraint to prevent her from injuring herself or someone else. He agreed that her injuries might have been caused by being caught momentarily by a person who was endeavouring to restrain her or fend her off. Dr. A. P. Husband said that the fracture of the artificial teeth was consistent with violence, and he did not agree that they had been broken by striking the edge of a fender, for then they would have been more shattered. He also thought it highly improbable that they had been broken by a fall on a hard surface.

After the case for the Crown had been completed, Mr. G. R. Thomson, K.C., the Advocate-Depute, reduced the accusation to one of culpable homicide. Prof. Sydney Smith, giving evidence for the defence, developed the possibility that the woman might have died of alcohol. Regurgitation might have passed from the stomach to the windpipe and caused suffocation, which if death resulted would leave symptoms of asphyxia. The bruising could have been produced by a fall, and the damage to the denture could have been caused by the woman falling on her face. He had conceived the idea that she had been very drunk, unable to stand and falling about. If there had been another person in the house, that person was probably in the same condition. It was hardly possible that the wife would go on drinking by herself in the presence of the husband without being stopped, unless they were both drinking. She might have fallen on the fender so that her face and head, and possibly her heart, struck the kerb. Another thing to consider was that she had fallen forward on her face, and her husband might have tried to lift her by the shoulder and pull her up. Very considerable force was required to lift a limp body, and the scratches might have been caused by the attempt. The jury were absent only seven minutes before they brought in a unanimous verdict of Not Guilty.

* *Glasgow Herald, Scotsman*, Feb. 27, 28.

The Services

HONORARY PHYSICIAN TO THE KING

Major-General J. A. Manifold, D.S.O., late R.A.M.C., has been appointed Honorary Physician to the King, vice Major-General J. W. L. Scott, C.B., D.S.O.

HONORARY SURGEONS TO THE KING

Major-General O. W. McSheehy, D.S.O., O.B.E., late R.A.M.C., and Colonel (temporary Brigadier) C. M. Finny, O.B.E., late R.A.M.C., have been appointed Honorary Surgeons to the King, vice Major-General F. D. G. Howell, C.B., D.S.O., M.C., and Colonel B. Biggar, respectively.

NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers to the Naval Medical Compassionate Fund will be held on April 30, at 3.15 p.m., at the Medical Department of the Navy, 64, St. James's Street, S.W.1, to elect six directors of the Fund.

MENTION IN DISPATCHES

Surgeon Commander William Flynn, R.N., has been mentioned in dispatches for courage and devotion to duty when H.M.S. *Liverpool* was damaged during an attack by enemy torpedo-carrying aircraft.

CASUALTIES IN THE MEDICAL SERVICES

Colonel EDWARD MEREDYTH MIDDLETON, O.B.E., late R.A.M.C., was killed by enemy action in March, aged 60. He was the eldest son of the Rev. F. E. Middleton, late Rector of Hayesford, Norfolk, was born on October 10, 1880, and was educated at Toronto University, where he graduated M.B. in 1905, and at St. Thomas's Hospital, taking the M.R.C.S., L.R.C.P. in 1906. Entering the R.A.M.C. as lieutenant in 1907, he became colonel in 1935, and retired in 1937, when he joined the Reserve of Officers, in which he was serving as Assistant Director of Medical Services, Western Command, at the time of his death. He was on his way to a hospital when he was killed by a bomb. He served in the war of 1914-18 and was mentioned in dispatches in 1916.

ROYAL ARMY MEDICAL CORPS

Lieut. JOHN INGLEBY WILSON is posted as "Died" in an Army Casualty List published on April 7. He was 33 years of age and qualified M.R.C.S., L.R.C.P. in 1933. Before the war he was in practice at Knaresborough, Yorkshire.

Obituary

SIR GEORGE TURNER, K.B.E., C.B., F.R.C.S.,

Consulting Surgeon to St. George's Hospital

Sir George Turner, consulting surgeon to St. George's Hospital and, during the last war, consultant to the Navy with the rank of surgeon rear-admiral, died at Adelaide Crescent, Hove, on April 7, aged 85. His elder brother, the late Edward Beadon Turner, was for many years a leading figure in the central work of the British Medical Association, and the clock facing the inner courtyard of B.M.A. House commemorates his long service on the Council and chairmanship of the Representative Body. Both brothers were educated at Uppingham School during Edward Thring's headmastership, and went on to St. George's Hospital, and they were devoted sons of these two foundations; they were also fine athletes and played rugby football for England in the early international matches.

George Robertson Turner was born at Chigwell, Essex, in 1855; his ancestors were Devonshire people, and three of his uncles were doctors. Leaving Uppingham in 1872 he had a distinguished career at St. George's, winning an exhibition, a scholarship, and several prizes. He qualified in 1877, and after acting as house-surgeon and demonstrator of anatomy obtained the F.R.C.S. in 1880. He was then appointed surgical registrar at St. George's, and in 1887 assistant surgeon, by which time he had become a member of the visiting staff of the Seamen's Hospital at Greenwich, and he served the Dreadnought for eighteen years. In 1914, on the outbreak of war, he was posted temporary Surgeon Rear-Admiral, and in that capacity worked at the R.N. hospitals at Chatham and Plymouth, and as surgical consultant to the Admiralty. Part of his time when he was nominally at Chatham was occupied by a voyage to Malta to bring back some 700 wounded from Gallipoli. For his services in the war he was created C.B. in 1917 and K.B.E. two years later. He retired from the active staff of St. George's in 1918. In earlier years he had been examiner in anatomy for the English Royal Colleges and office-bearer in the Medical Society of London. He wrote articles for Heath's *Dictionary of Surgery* and for Latham and English's *System of Treatment*.

Sir George Turner had a warm heart and a breezy manner and prided himself on his outspokenness; he wrote, "I have dared to live my life without an over-regard for what people thought and said of me." He often remarked that the Turners were very conservative, and the word "democracy" made little appeal to him. His service with the Navy in wartime gave him great joy, for he loved the company of sailors. It was said by a shrewd judge of men, Sir Henry Burdett, with whom he had many passages of arms at the Dreadnought Hospital, "Turner knows what he wants and usually gets it." In 1931 he published his *Unorthodox Reminiscences*. This discursive book is a mine of good stories about men in various walks of life, particularly in the world of sport and racing, and the last chapter relates many interesting experiences that came his way when he wore naval uniform. Lady Turner died in 1926. Of their five children one son was killed in the last war, and one of the three daughters married Mr. G. A. Ewart, surgeon to St. George's. In retirement at Hove Sir George maintained his characteristic vigour of mind, and up to a short time ago was notably alert and active for a man of his advanced age.

W. MITCHELL SMITH, M.D.

By the death of William Mitchell Smith at the age of 68 on March 20 North Staffordshire mourns the loss of one of its foremost citizens and the crippled child a true and kindly friend.

A native of Aberdeenshire, Mitchell Smith graduated at Aberdeen University, for which he retained always a great pride and affection. He was never happier or more interesting and entertaining than when speaking of his beloved Scotland, of his boyhood days and his ever-cherished parents, of his life among the crofters, and of his old teachers and the profound influence they had on his future professional career, particularly, perhaps, Sir Alexander Ogston, whose portrait hung in his consulting rooms. Towards the end of last century he settled in the picturesque village of Tean, about ten miles from Stoke-on-Trent, where he soon built up a very large country practice. Alert, enterprising, and level-headed, he kept himself fully abreast of the progress in medicine and was always ready to adopt new methods if, after careful study, he considered that such treatment would prove of benefit to his patients, with whom he had great influence, and in their turn they looked upon him as a friend and wise counsellor.

Mitchell Smith was naturally a lover of children, and he was blessed with the power of obtaining the confidence, affection, and understanding of young people; he was keenly interested in those diseases common to children, and after he had firmly established his practice it was his custom to attend various children's clinics, particularly those of Still and Batten. In the early days of the last war he became associated with me in the care of crippled children at Hanchurch, a home originated by Millicent, Duchess of Sutherland, and Mr. Sydney Malkin, the father of a well-known orthopaedic surgeon, and the late Dean of Carlisle, who was then Rector of Stoke; the work increased to such an extent that further accommodation had to be found, and a small house was rented in the city for the treatment of out-patients. About this time I handed over to him, and later a further move became necessary as the amount of work was growing, and Smith decided to give up his practice and to devote his whole time to work among cripples—a very courageous step to a man who was then over 40 years of age. Eventually, with the help of many kind and interested friends, some old stables were converted into a Cripples' Home, which flourished, and still further extensions were added, until eventually an entirely new hospital was built, one of the foundation stones of which was laid by Sir Joseph Cooke, a native of North Staffordshire, and at that time Premier of Australia. In 1930 the Prince of Wales opened a new block, and in the following year a very fine open-air ward was opened by the Duchess of Portland.

In order to gain further and special knowledge of orthopaedic surgery, Smith became a resident at the old Baschurch Hospital, where he had the good fortune to come under the guidance of Dame Agnes Hunt, the late Sir Robert Jones, and the late Naughton Dunn, all of whom became his lifelong friends and who on many occasions conducted clinics at the hospital, when Sir Robert would bring with him distinguished orthopaedic surgeons from home and abroad. These clinics were greatly appreciated by the local members of the profession and were always well attended, and it was an inspiration to study Mitchell Smith on these occasions, overcome as he was with pride and joy when his results were praised and criticized by the great master Sir Robert Jones. The continued success of this hospital is due to the determination, keenness, and foresight of Smith, for it was by his own perseverance and unbounded energy that so wonderful a result followed upon such small and humble beginnings.

Mitchell Smith's one thought in life was the crippled child, their education while inmates of the hospital, and their training to become useful members of the community in the workshops attached to the hospital. He established also clinics for the treatment of cripples in various towns in North Staffordshire, which he visited regularly, and they proved most popular and successful; he was also closely associated with the children's clinics organized by the city and county authorities. Later, when the hospital decided to admit adult patients suffering from deformities, he showed the same enthusiasm and skill.

In dealing with fractures Smith had unbounded patience, and he was a master in the art of manipulation, reserving operative treatment until other methods had failed, though he was a sound surgeon, especially when dealing with deformities of the feet.

A brusque manner hid a very kindly heart, and we, including numbers of patients, especially children, will ever retain happy memories of the man, with a real appreciation of the work he has performed, of a loyal friend who reached a high position by his determination, by dint of hard work, and by his constant belief in the best and only the best; and finally he will ever be remembered as the man who first raised the treatment of crippledom in North Staffordshire to the high position it now occupies.

ERIC E. YOUNG.

FREDERICK JOHN McCANN, M.D., F.R.C.S.

Dr. F. J. McCann, consulting surgeon to the Samaritan Free Hospital for Women, Marylebone Road, died on March 28. He was born in Edinburgh and educated at the University there, qualifying in medicine in 1888. After serving as demonstrator of anatomy at Edinburgh he came south, and held in turn the positions of resident medical officer to the Belgrave Hospital for Children and Queen Charlotte's Lying-in Hospital, house-surgeon to the Children's Hospital, Great Ormond Street, and senior house-surgeon to the West London Hospital. Dr. McCann built up a considerable reputation as a gynaecologist, and presently acquired a large consulting practice in Wimpole Street. In addition to his work at the Samaritan he was consulting gynaecologist to the West End Hospital for Diseases of the Nervous System and to a number of other hospitals in and around London.

He became a member of the Royal College of Physicians of London in 1892, took the M.D. of Edinburgh, with honours, in 1897, and the F.R.C.S.Eng. in 1901, and he was a Fellow of the British (now the Royal) College of Obstetricians and Gynaecologists from its foundation. He was a man who cultivated the international outlook. His medical education was completed in Berlin and Dresden, and he made close acquaintance with the medical schools of Paris, Leipzig, Vienna, Munich, Budapest, and Lisbon. When the fifteenth International Medical Congress was held at Lisbon in 1906 he was honorary president of the Section of Obstetrics and Gynaecology. He was also a member of the Société Internationale de Chirurgie and vice-president of the Ligue Internationale pour la Vie et la Famille. He was an excellent public speaker, with deliberation in his choice of words, and in the old days of the polyclinic in Chenies Street a highly popular lecturer there. He was also prominent in a number of medical societies, and had occupied the chair both of the Chelsea Clinical Society and of the West London Medico-Chirurgical Society. He was author of several works on his specialty, the chief of which was *The Treatment of Common Female Ailments*, which went through several editions; also *Cancer of the Womb: Symptoms, Diagnosis, Prognosis, and Treatment*; and he contributed the articles on gynaecology to several medical encyclopaedias.

In his dignified appearance and manner, his air of deference and old-world detachment, McCann recalled an earlier age in medicine, and given a wig and a gold-headed cane he would have fitted into the picture of eighteenth century physicians. But he was far from indifferent to modern trends and methods, and his kindly disposition evoked affection among a wide circle of friends and juniors.

JOHN SMYTH MACDONALD, F.R.S.

The death took place at Bridge of Allan, Stirlingshire, on March 29 of John Smyth Macdonald, F.R.S., Emeritus Professor of Physiology at Liverpool University.

Prof. Macdonald was born in Dublin in 1867, but his father's home was at Chester, and there, at King's School, he received his early education, going on to Emmanuel College, Cambridge, and to Liverpool University, where, in 1891, he was Holt Fellow in Physiology. It was a circumstance of great pride to him that, twenty-three years later, he should be called back to his old department as Holt Professor of Physiology. He was also, in 1899–1901, a research scholar of the British Medical Association. The other Association scholars of those same years were the future professors G. Elliot Smith and J. W. H. Eyre. After holding teaching posts in the physiological laboratories at Liverpool, Dundee (St. Andrews University), and Sheffield, he became in 1903 Professor of Physiology at Sheffield University, and this chair he held for eleven years. Then came what he regarded as the greatest honour of his life, his appointment to Liverpool, where he succeeded his great and revered master Sir Charles Sherrington, who had been Professor of Physiology there for almost two decades. His tenure of the chair was almost as long as Sherrington's, and on his retirement under the age limit in 1932 he was made professor emeritus.

Several contributions were made by Macdonald to the *Proceedings* of the Royal Society, of which he became a Fellow in 1917, and to the *Quarterly Journal of Experimental Physiology*. At the Annual Meeting of the British Medical Association at Sheffield in 1908 he was honorary secretary of the Section of Physiology, and when the Association met in Liverpool in 1912 he was president of the same Section. His short presidential address on that occasion was chiefly devoted to demonstrating an antagonism between serum and blood corpuscles. He was an original thinker with an unusual way of putting the facts of physiology before his students. For example, thirty years ago he was likening the muscles to energy pumps which, by their proprioceptive mechanism, retransmitted impulses to the central nervous system. He also suggested that the role of oxygen in the central nervous system might be that of a scavenger. He rejected the opinion which regarded the nerve fibre as an insulated path and the cell body as a battery; in its place he held the view that the nerve might be regarded as equivalent to a series of batteries.

In his later years Prof. Macdonald had lived in quiet retirement in Lincolnshire and in Scotland. He had married a Scottish lady, Miss Stewart of Stornoway, who survives him.

Dr. DAVID DIAMOND, M.R.C.P., D.P.H., deputy medical officer of health for the city of Kingston-upon-Hull, has been killed by enemy action. He was born in London and received his early education in South Africa and his medical education in London at St. Bartholomew's Hospital, qualifying L.R.C.P., M.R.C.S. in 1923, and, having chosen public health as his career, he proceeded to the D.P.H. in 1931. After gaining experience in Holborn and the Port of London he was appointed assistant medical officer of health under the Hull and Goole Port Health Authority in 1931. In 1934 he became senior assistant medical officer of health in charge of the Tuberculosis Department, which post he held until his appointment as deputy medical officer of health for the city of Hull on January 1, 1939. He obtained the M.R.C.P. in 1937. The M.O.H. for Hull sends the following tribute: "We, who were privileged to be his colleagues in the Hull Health Department, mourn the loss of an able colleague and a brave man. The death while on A.R.P. duty of Dr. David Diamond came as a great shock to us all. He was appointed to the staff of the department in 1931. His ability secured for him rapid promotion and he became deputy medical officer of health. His wide knowledge of men and affairs stood him in good stead in his approach to the many and varied public health problems of this City and Port. Since the war he had been closely associated with the organization and administration of the A.R.P. casualty services, and the end came while he was engaged in controlling the operations of the service in the creation of which he had played so important a part. He will long be remembered as an able physician, untiring in his efforts to ameliorate the lot of his less fortunate citizens, and as a promising public health administrator. Our deepest sympathy is extended to his widow and two young daughters in their sad bereavement." Dr. Diamond joined the British

Medical Association twelve years ago, and at the time of his death was a member of the Council of the East Yorkshire Branch.

Dr. JOHN TAYLOR died at Dunfermline House, Elgin, after a few days' illness, on March 31. He had been a member of the British Medical Association for nearly fifty years and was a past-president of the Northern Counties of Scotland Branch. His professional training was at the University of Aberdeen and the School of the Royal College of Surgeons of Edinburgh. He graduated M.B., C.M.Aberd. in 1886 and proceeded M.D. in 1891. After qualifying Dr. Taylor returned to his native town, Elgin, and built up a large general practice. He held many local appointments in and around Elgin and was consulting surgeon to the Fleming Hospital at Aberlour. During the greater part of his career he had close associations with Dr. Gray's Hospital, of which he was for many years visiting medical officer. On retiring from the active staff of the hospital in 1938 the managers placed on record their high appreciation of the services he had given to that institution, and made him an honorary consulting surgeon. He was also a Justice of the Peace for Morayshire.

Dr. THOMAS HARTIGAN, who died on April 2, studied medicine in Dublin and Newcastle and graduated M.B., B.S. of Durham University in 1893, proceeding M.D. in 1907. He practised in London for many years, at Gloucester Terrace, W. "F. N. R." writes: The news of Dr. Hartigan's death will be received with very real grief by his friends, colleagues, and patients. With his quiet reserve, he was not an easy man to get to know, but behind this lay a fund of endearing qualities, not the least of which was his dry and never-failing sense of humour. He was the epitome of what a doctor ought to be: the kind physician with a power of imparting confidence and a sense of trust, given only to those possessed of real ability and a great human understanding. Neither rash nor too conservative in outlook in his dealings with patients, he held to the single objective of what was the very best which could be done for each one; added to this was a real kindness of heart, such as is rarely met. I saw him quite recently, and his preparations for the inevitable had been made with that calm consideration for others so characteristic of all his utterances and actions. Those of us who were honoured by Thomas Hartigan's friendship will count ourselves fortunate, grieve at his departure, and look back upon his example.

The following well-known foreign medical men have died: Dr. JAN SCHOEMAKER of The Hague, twice president of the Dutch Medical Association and President in 1935 of the International Surgical Congress at Cairo, aged 69; and Dr. CHARLES LAUBRY, professor of cardiology in the Paris faculty of medicine, aged 69. Both were Honorary Fellows of the Royal Society of Medicine.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians of London on April 7 Sir Charles Wilson was elected President.

The Licence of the College was granted to Mohamed Abdul Hafeez of Osmania University and West London Hospital.

Diplomas in Ophthalmic Medicine and Surgery were granted, jointly with the Royal College of Surgeons of England, to the three candidates whose names were printed in the *Journal* of March 22 (p. 465); as were the names of the nineteen successful candidates for the Diploma in Tropical Medicine and Hygiene.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—E. W. Crews, C. Farès, S. Wetherell.
MEDICINE.—M. M. El Garrahy.
FORENSIC MEDICINE.—M. M. El Garrahy.
MIDWIFERY.—P. L. McN. Armstrong.

The diploma of the Society has been granted to E. M. Crews, M. M. El Garrahy, and S. Wetherell.

Medical Notes in Parliament

Mr. Ernest Brown on April 10 received a deputation on the Medicine Stamp Duty. The members of the deputation were Captain Elliston, Sir Francis Fremantle, Mr. Keeling, Sir Robert Bird, and Lord Wolmer. All were in favour of the retention of the tax. Mr. Brown is to bring in a Bill proposing its abolition. A further deputation is projected to Sir Kingsley Wood.

Insurance Practice of Casualty Service Doctors

Mr. ERNEST BROWN, on April 1, told Mr. Groves that an insurance practitioner was required to make all necessary arrangements for securing the treatment of his insured patients where prevented from giving such treatment himself by urgency of other professional duties or other reasonable cause. If neither the practitioner nor his deputy was available any other insurance practitioner could be required to give it. A fee was payable to the last-mentioned practitioner, subject to the claim being passed by the panel committee. The fee was recoverable from the patient's own practitioner unless the panel committee was satisfied that there was reasonable cause for not summoning him.

In reply to another question by Mr. Groves, the Minister said that in a number of areas a rota of doctors for duty at first-aid posts, medical aid posts in public shelters, and food and rest centres had been arranged. Similar arrangements for providing medical attention for insured persons was a matter for agreement between the panel committee and insurance committee of each area concerned, and detailed information was not available.

Registration of Alien Doctors

Mr. BROWN explained on April 2 that the Medical Practitioners (Temporary Registration) Order, 1941, and the Defence Regulation under which it was made provided for the registration of doctors of certain alien nationalities not possessing British medical qualifications, if they were employed or had been selected for employment in an approved hospital or other institution or service not involving domiciliary practice. He said it was not intended to fix a maximum number of doctors who should have the benefit of the Order. Up to date twenty-eight doctors of enemy nationality had been selected for employment in accordance with the Order.

Accommodation for Fracture Treatment

Answering Mr. Magnay, Mr. BROWN on April 3 said he proposed to provide for fracture cases occurring among industrial workers so far as possible under the Emergency Hospital Scheme. The hospital accommodation available included a large number of beds in hospitals and orthopaedic centres which were, or would shortly be, specially equipped for dealing with fractures and for giving the most modern forms of physiotherapy and occupational therapy. For war casualties, both military and civil, these facilities were welded together into a comprehensive organization, supervised by the consultants in orthopaedic surgery employed by the Ministry of Health and the Department of Health for Scotland, so that the patients could be sent to the hospitals best suited for dealing with their injuries and, if necessary, transferred from one to another. The treatment of casualties was and must remain the primary purpose of the Emergency Hospital Scheme, but, to secure the fullest possible use of the organization, the Government had decided that in so far as there were vacant beds not likely to be required for the treatment of war casualties, they should be made available for fracture cases occurring among certain classes of the civil population whose early return to work was of special importance to the national cause. These, whether the injury was sustained in the course of their duties or not by manual workers engaged in munition work (including shipbuilding and ship repairing), building and civil engineering, mining, agriculture, fishing, public utility undertakings, shipping and transport, would be eligible for treatment in hospitals

or centres under the emergency scheme, in so far as facilities were available. Whole-time paid civil defence personnel would also be included in these arrangements. The patient would be expected to contribute through any contributory association to which he belonged or, if not a member of such an association, to pay such amount as he could reasonably afford towards the cost of his treatment, according to ordinary hospital practice.

Medicine Stamp Duties

In introducing the Budget on April 7 Sir KINGSLEY WOOD said that when the Finance Bill of July was being discussed the question was raised of the application of the purchase tax to medicines subject to the medicine stamp duty. It was pointed out that this involved a tax upon a tax, and comments were made on the medicine stamp duties themselves, which, as his predecessor had told the House of Commons in 1939, had become administratively unworkable, and which it was highly desirable to repeal on that ground. The various interests concerned with the duties had come together and reached an agreement. He had consulted with the Minister of Health and, as a result, was in a position to announce that the Medicine Stamp Duties would be repealed. The Minister of Health would as soon as possible introduce legislation the object of which would be to maintain a fair balance between the interests of the pharmacists and of other vendors. The repeal would come into operation from September 2, so as to allow reasonable time for disposal of stamped stocks. We should part, therefore, with the Act of 1802 and other Acts on this matter, which, in process of time, had become a museum-piece of administrative complexity. The cost of this repeal would be £640,000 this year and £840,000 in a full year.

During the discussion on the Budget in the House of Commons on April 9 Captain ELLISTON said that the proposal to abolish the medicine stamp duties would mean the surrender of approximately £800,000 a year in revenue. He urged the Chancellor of the Exchequer to think again before he surrendered this sum which a great industry could well afford to pay. The Select Committee, which reported in 1936, while recommending that the duties should be simplified to remove anomalies, difficulties, and irregularities of administration, was of opinion that the trade was suitable for taxation and that a further large range of preparations should be liable. The Committee estimated that the turnover of the patent medicine manufacturers could be put at £20,000,000 a year, and that the taxation they proposed would yield not less than £3,300,000 a year. From the point of view of public health, the House of Commons was being asked to agree to proposals to remove a tax which, to some extent, acted as a check on extravagant indulgence in the habit of self-medication. If the duties were abolished it was notorious that there would be a marked increase in drug-taking and self-medication. These patent medicines, which could not now be sold under about 1s. 3d., would be put on the market in 6d. and 3d. packets. They would be obtainable from automatic machines and would cover the counters of the chain stores. They would be available in every grocer's shop. If the Chancellor of the Exchequer was determined to wipe out the Stamp Duty the House was entitled, before he did so, to have a Bill which, he understood, the vendors were ready to accept, which would control the advertisement of medicines and secure some measure of protection for the public.

Sir KINGSLEY WOOD said he would take into account what Captain Elliston had said. The proposals he had made in the Budget, if they were to be effective, must be contained in the Finance Bill, and he hoped that, as the interests concerned were in agreement, in any representations made to him it would be possible to maintain that agreement. Further debate on the Budget was adjourned until after Easter.

Decisions of Medical Boards

On April 8 SIR ERNEST GRAHAM-LITTLE asked the Secretary of State for War whether he was aware that dissatisfaction existed regarding the methods at present in force by which the Army authorities overruled the grading of recruits by the civilian medical boards; and whether he was aware that while two medical officers at least were required to reduce a recruit's category, one medical officer, unaided by any specialist or colleague, could raise that category. Captain MARGESSON said that instructions for the medical classification of soldiers were in process of amendment, the effect of which would be that the medical category of a recruit would not be altered during his first month's service unless the circumstances were exceptional. In regard to reclassification after that period, Sir Ernest Graham-Little would appreciate that, apart from possible changes in a man's physical fitness during the time that might elapse between examination by a civil medical board and calling-up, disability might only come to light during training. On the other hand, the conditions of Army life might improve the physcial fitness of a recruit to such an extent as to justify transfer to a higher medical category. Specialist advice was obtained by the Army medical officer where necessary.

Capitation Fee

On April 8 Mr. GROVES asked the Minister of Health whether further consideration had been given to the question of increasing the capitation fee payable to insurance practitioners, or granting them a *per capita* war bonus, having regard to the increased cost of living and the increased practice expenses, as well as to the fact that the fee was fixed on an insurance basis which had entirely changed by reason of so many of the healthiest insured persons being withdrawn from civil life and serving with the armed Forces. Mr. ERNEST BROWN replied in the affirmative. He said that the question had received full consideration. He had come to the conclusion that under present conditions he would not be justified in proposing an increase in the capitation fee.

Examination of Recruits to A.T.S.

Mr. LAW informed Miss Ward, on April 8, that eighty women held commissioned rank in the R.A.M.C. The Ministry of Labour was responsible for the medical examination of men called up for the three Services under the National Service (Armed Forces) Acts as part of its general responsibility for the calling-up arrangements. As that Ministry was not responsible for the medical examination of recruits for the Auxiliary Territorial Service, this examination was normally carried out by R.A.M.C. women doctors, but, if a R.A.M.C. doctor was not available, a woman civilian medical practitioner was employed. He saw no objection to this arrangement, which worked well in practice and was calculated to secure the most economical use of medical personnel.

War Casualties

The approximate number of United Kingdom casualties from the beginning of the war to April 9 is:

Civilians

	Killed	*Injured and Detained in Hospital*	
Men	13,712	Men	21,811
Women	12,112	Women	15,893
Children under 16	3,644	Children under 16	3,193
Unclassified	388		
Total	29,856	Total	40,897

Armed Forces

Killed and Missing	Wounded
37,607	25,895

Doctors Hard Hit by the War

Mr. GROVES inquired on April 10 what consideration had been given to the fact that doctors in danger zones suffered serious financial losses and experienced great difficulty in making a livelihood, and yet doctors in safe zones, by reason of evacuation, profited at the expense of the others. He asked whether some reasonable adjustment could be made so as to compensate the less fortunate doctors. Mr. BROWN replied that measures to meet the situation described, which was not peculiar to the medical profession, were primarily a matter for the profession itself rather than for the Government. The

Central Medical War Committee had acted so far as possible as a clearing house for the transference of doctors from evacuation to reception areas. The official arrangements for wartime medical services had also taken account of the special position of doctors in evacuation areas. For example, a number of those in coastal towns had been appointed to salaried posts in the Emergency Medical Service in their own towns or elsewhere. The number selected for commissions in the medical branches of the Forces was proportionately larger in the evacuation areas than elsewhere.

Medical Man-power

In reply to Sir FRANCIS FREMANTLE on April 10 Mr. BROWN said he had not yet established an organization for settlement of priority, as between the demands of the several Forces and Departments, for medical men, as recommended in January last by the Robinson Committee and urged by the Central Medical War Committee as essential to its work. The Service Ministers and the Secretary of State for Scotland and he awaited the results of the measures taken to carry out the other recommendations of the Robinson Committee. In the meantime they had not thought it necessary to set up any special priority organization. The matter would be kept under consideration.

Conditions at Prisoner-of-War Camp in Germany

Prof. SAVORY asked the Secretary of State for War whether he was aware that, according to the latest information, medical officers detained in camp Stalag XXA, in spite of the Geneva Convention, were suffering from having only one blanket in a temperature of 20° below zero; whether he would make representations to the German authorities through the protecting Power to provide extra blankets and also the necessary remedies for the destruction of the lice, described as ubiquitous; and, in view of the fact that while there was a cobbler's shop there was no leather and it was necessary for these officers to have repairs done to their boots, he would endeavour to arrange that leather should be provided.

Captain MARGESSON: Representations have been made to the German Government on both the first two points referred to in the question. There was a general shortage of leather in Germany, and in some cases wooden soles were being used as a substitute. The number of pairs of boots sent to the International Red Cross Committee for distribution to British prisoners of war was 97,125, and there had recently been a considerable improvement in the state of footwear in the camps. A further consignment of boots was at present on its way from this country.

Anti-gas Ointment.—Asked on April 3 about the supply of ointment for dealing with the effects of blister gases, Mr. HERBERT MORRISON said that bleach ointment had been on sale for some time. Anti-gas ointment No. 2, which was better, was now procurable through any chemist. To meet the needs of members of the public who did not provide themselves with a supply of ointment, arrangements had been made for bleach cream, which could not readily be carried in small containers, to be available in the event of emergency at chemists' shops. He would consider whether it was possible to supply a small pocket outfit to wardens and other civil defence workers.

Calcium in Wholemeal.—Mr. LEVY asked on April 9 whether the Ministry of Food was aware that the phytic acid in wholemeal used up all the calcium contained in it, and whether they would consider the addition of calcium to the Ministry's wholemeal loaf to protect consumers against rickets. Major LLOYD GEORGE did not accept everything in Mr. Levy's question, but said that his suggestion was under active consideration.

Cost of Diphtheria Immunization.—Answering Mr. Creech Jones, Mr. BROWN said on April 10 that the cost of immunization fell under the two main heads of payment for medical services and cost of prophylactic material. As the work might be carried out in part by local authorities' own salaried medical staff and in part by general practitioners under varying financial arrangements with local authorities, it was not possible to estimate expenditure under this head. The cost of supplying prophylactic was estimated at about £7,000 per million children, or rather more than 1½d. per child.

Blood Donors.—Local appeals for blood donors have been organized where necessary by the blood transfusion officers serving in the Emergency Medical Service in each region. Mr. Brown is advised that the number coming forward as a result is adequate except in a few isolated instances. In these cases help is obtainable from a neighbouring town. Mr. BROWN said on April 10 that the matter could safely be left in the hands of the regional blood transfusion officers, and that no special appeal by him was necessary.

Fees Paid to Medical Boards.—On April 8 Mr. BEVIN told Mr. Groves that the total sum paid in fees to members of recruiting medical boards in the twenty-one months up to February 28 last was about £1,199,350. He could not state, without making a detailed inquiry, the maximum and minimum amounts paid to individual doctors or the total number of doctors who at some time during the period participated in the work. The number of doctors at present on the panels of medical boards was 3,724.

Medical News

Dr. O. R. Tisdall will read a paper on "The General Practitioner and Scientific Thought" before the Royal Society of Arts (John Adam Street, Adelphi, W.C.) on Wednesday, April 30, at 2.30 p.m. Viscount Dawson of Penn will preside.

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, April 24, at 5 p.m., when Dr. J. C. M. Matheson will read a paper on "Infanticide."

The seventeenth annual meeting of the American Association of the History of Medicine will be held at Atlantic City on May 4 to 6 under the presidency of Dr. Esmond R. Long, Henry Phipps Institute, Philadelphia.

The Duke of Kent, president of King Edward's Hospital Fund for London, in a broadcast talk on Easter Monday on the work of the hospitals since the war started, spoke of the damage suffered from enemy bombing. The hospitals, he said, kept going and going strong, because there were brave and devoted men and women who were determined to overcome any difficulties.

At a dinner held in a Scottish town, attended by senior medical officers of the Polish Army, the Director-General of the Military Medical Service of the Republic of Poland presented to Colonel A. Irvine-Fortescue, D.S.O., M.B., the illuminated diploma and enamelled cross of the Polish military distinction known as the Odznaka Sluzby Zdrovia (badge of medical service). In making the presentation the Polish D.-G. said that the whole Polish Medical Service in Britain knew Colonel Irvine-Fortescue well, and paid tribute to his work in helping the organization of the Service.

The Manchester Jewish Hospital, which was forced to suspend its work for two months owing to damage to part of its buildings, is once again admitting patients, and half of the beds in the hospital are already in use. It is hoped to make up the full complement of beds in the next few weeks.

At a recent Court of Governors of Bethlem Royal Hospital it was announced that Queen Mary had consented to be nominated president of the hospital. The foundation of this hospital dates from 1247 in the reign of Henry III, and its charter, which embraces its sister hospital, St. Bartholomew's, was granted by Henry VIII in 1547. The revenues are now devoted to the maintenance of the hospital at Monks Orchard, near Beckenham, Kent, opened by Queen Mary in July, 1930, where patients suffering from nervous and mental disorders are received and treated on the most modern principles, and where a centre of active research has been established through the generosity of its former president, the late Lord Wakefield.

The late Mr. Herbert Tilley, F.R.C.S., who left £101,249 (net personalty £97,485) bequeathed £800 to the Royal Ear and Throat Hospital, University College, for the upkeep of the Herbert Tilley Museum, and £200 upon trust for an annual lecture, and £1,000 to the Royal Medical Benevolent Fund.

Prof. Henry Sigerist of Johns Hopkins University and Dr. Esmond R. Long, president of the American Association of the History of Medicine, have been elected honorary members of the History of Medicine Athenaeum of Buenos Aires.

The scientific report of the Royal College of Surgeons of England for the year 1939–40, presented by the Conservator, Prof. John Beattie, indicates briefly part of the work carried out by the museum department and by the research laboratories between October 1, 1939, and September 30, 1940. The pathological curator and various members of the technical staffs remain absent on military or national service. A sustained inflow of specimens during the year is recorded with satisfaction. Though the museum is now closed, it is hoped that Fellows, Members, and other friends may continue to bear in mind its needs, even though specimens presented now cannot be critically examined or mounted until the end of the war.

One hundred girls are to be formed into a mosquito squad in Queensland for fighting mosquitoes in military camps. They will be specially trained in hygiene and other subjects.

Canada is setting up a "blood bank" to provide transfusions for 20,000 military and civil casualties.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

One hundred and sixty-eight fewer cases of measles were reported than in the preceding week. But, despite the general downward trend, increases have been notified from some areas. The following figures show the extent of the increase over those for the preceding week—Nottingham, Worksop R.D. 67; Staffordshire, Brierley Hill U.D. 67 and Rowley Regis M.B. 53; Warwickshire, Birmingham C.B. 160; York, West Riding, Leeds C.B. 54 and Hemsworth U.D. and R.D. with 22 and 20.

Diphtheria showed 31 notifications in excess of the previous week. A fall of 16 in the notifications of scarlet fever was recorded; but in Staffordshire the returns rose from 41 to 77, and in Lancashire from 173 to 196. Of the 24 cases of enteric fever notified in England and Wales 12 were returned from Northamptonshire (10 from Brixworth R.D.). There was no change in the total notifications of cerebrospinal fever; the county of Chester showed an increase of 10, and London and Swansea both returned 7 more cases than in the preceding week. The number of cases of dysentery decreased by 18, although fresh outbreaks were reported from several areas, the largest being Essex, Witham U.D. 9; Gloucestershire, Bristol C.B. 6; Yorks, West Riding, Wortley R.D. 12.

Whooping-cough

There were 4,319 notifications for the week ending March 22, a rise of 981 on the preceding week. This is the largest figure recorded since the returns of whooping-cough were first published in November, 1939. The rise was fairly general throughout the country, the largest increases being reported from Lancashire, Leicestershire, and Yorks, West Riding, with, respectively, 75, 57, and 93 more cases than in the previous week. The eastern counties have a low incidence—Suffolk 23, Norfolk 14, and Lincoln 14—and very small numbers are recorded from the south-western counties of Dorset 10, and Cornwall 9.

Returns of the Registrar-General for Scotland

The publication of the returns for the fourth quarter of 1940 include a preliminary return for the year. The birth rate of 17.1 per 1,000 for the year was the lowest ever recorded in Scotland. The death rate was high, 14.9 per 1,000, being 1.7 above the average for 1935–9. Infant mortality was 78 per 1,000 live births. This was a higher value than that recorded in the two preceding years, but with two exceptions lower than for all years before 1938. Deaths from scarlet fever 35, and whooping-cough 197, were the lowest ever recorded in Scotland for these diseases. The deaths from measles 262, diphtheria 676, and influenza 1,801 were respectively 25, 246, and 577 above the average for 1935–9. Deaths from cerebrospinal fever numbered 482, against 61 in the preceding year, and was the largest number registered as due to this cause since 1907.

No. 12

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases: a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	330	26	80	2	19	475	52	106	2	9
Deaths		3	4				6	11		
Diphtheria	1,064	60	278	24	28	678	31	245	50	32
Deaths	44	4	6	—	—	20	1	5	—	3
Dysentery	128	25	36		—	28	2	63		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	2	—	1		—	4	—	1		—
Deaths		—	—				—	1		
Enteric (typhoid and paratyphoid) fever	24	1	82	2	2	29	3	189	2	—
Deaths	—	—	—	—	—	2	1	1	—	—
Erysipelas		1	48	6	—		—	52	3	1
Deaths			—					—		
Infective enteritis or diarrhoea under 2 years	38	2	11	4	7	35	2	11	12	7
Deaths										
Measles	14,888	249	168		19	3,111	51	58		180
Deaths	21	—	1	1	—	7	—	1	1	3
Ophthalmia neonatorum	83	2	24		—	83	6	25		2
Deaths										
Pneumonia, influenzal*	1,177	37	29	6	6	1,296	68	26	11	9
Deaths (from influenza)	116	9	8	7	8	221	16	15	7	11
Pneumonia, primary			544	14				255	7	
Deaths		—		18	14		69		21	28
Polio-encephalitis, acute	—	—				1	—			
Deaths		—					—			
Poliomyelitis, acute	8	—	2	1	—	4	—	2	—	—
Deaths	—	—	—				—	—		
Puerperal fever	—	—	19	3	—	1	1	13	2	—
Deaths		—					—			
Puerperal pyrexia	24	1	27		2	169	7	24		—
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,205	55	162	28	27	770	29	129	38	55
Deaths	2	—	—	—	—	2	—	1	—	—
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	1	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	4,319	64	847		19	449	14	17		32
Deaths	36	2	22	2	2	7	—	2	—	1
Deaths (0-1 year)	478	30	165	24	28	452	55	75	43	45
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	6,733	944	843	235	242	5,153	929	809	214	194
Annual death rate (per 1,000 persons living)			18.4	15.6	21.2			15.1	14.3	17.0
Live births	5,322	396	991	321	249	5,526	890	780	271	201
Annual rate per 1,000 persons living			20.0	21.3	21.8			15.8	18.1	17.7
Stillbirths	228	16	45			252	29	35		
Rate per 1,000 total births (including stillborn)			43					45		

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Income Tax

Fall in Partnership Income

"X. Y. Z." carry on a practice in a defence evacuation zone and the receipts have suffered accordingly. The assessments have been on the cash basis. How should the income from the partnership be calculated?

*** It should be borne in mind (*a*) that the special relief to falling incomes does not affect liability to assessment on the previous year's basis, though it gives relief from the severity of the tax so assessed; (*b*) that the claim to relief must be made by an individual, in respect of his total earned income, and not by the firm as such. "X. Y. Z." should therefore compute the adjusted profit of the firm for 1940–1 and the division between the partners as if for the 1941–2 assessment. Each partner should then make an individual claim to relief for 1940–1 (assuming that the 20% reduction condition is complied with) to the local inspector of taxes, who will arrange accordingly. The fact that the firm's accounts are on the cash basis is not likely to create difficulty; actually it would tend to slow down the effect of the reduction in earnings.

Travelling Expenses—Appointment Books and Examination Fees

"J. F." holds an appointment as physician to an infirmary and continues to act as assistant physician to another infirmary. It was one of the conditions of the new appointment that he should be allowed to continue the duties of the former one. Can he claim travelling expenses? Also, can he claim expenses incurred on books, etc., in connexion with his study for a further degree?

*** It was held in a very old case that the expense of travelling from a residence to the place where the duties of an office are performed is not allowable. If the duties are carried on in more than one place (e.g., those of a Member of Parliament) the cost of travel from one to the other is allowable. Consequently, if the condition of carrying on his former duties were laid upon him by the authority from whom his new office is derived, "J. F." could by analogy, in our opinion, claim some allowance But we gather that that is not quite in accordance with the facts. The expenditure on books, examination fees, etc., represents capital outlay and is not allowable.

Part of Premises Let

"N." has let two sections of his house to tenants, in substantially an unfurnished condition. How does this affect his liability?

*** In the first place assuming that he still uses the same rooms as before for professional purposes (and to the same relative extent) the lettings will not affect the deduction to be made in calculating his professional earnings He is, however, apparently liable to account for tax on the additional monetary advantage he is deriving from the letting. The precise amount is a matter of calculation, the basis of which is that he is liable to assessment, as for unearned income, at a sum representing the excess of what the net Schedule A assessment would have been on the facts as they now stand over the actual assessment of £122. Probably the best course for "N." to follow is to send a statement of the facts to the local inspector of taxes and await the result.

LETTERS, NOTES, ETC.

Complications after Chemotherapy in Pneumonia

Dr. J. GRIMSON (London, N.3) writes: Since the introduction of sulphapyridine in the treatment of pneumonia many physicians, both in specialist and general practice, have noted the relative increase in the incidence of empyema and delayed resolution in cases treated by this drug from the immediate onset of symptoms. Bearing this in mind, I have recently delayed giving the drug until within forty-eight hours of the expected time of crisis. In every case so treated a typical crisis has occurred and there have not been any complications. I quite realize that a few such cases do not prove very much, but I think these observations are worth recording.

Treatment of Scabies

Dr. W. F. COOPER (London, S.W.20) writes: Dr. H. M. Berncastle (January 25, p. 135) describes the use of sulphur. Scabies seems to be becoming extremely prevalent, apparently due to shelters and carried from one person to another. Anyhow, the treatment is very important at the present time. I can confirm Dr. Berncastle's experiences, as I have had sufficient personal experience. There is evidently a very important difference between plain sulphur and the ointment. Plain sulphur, flowers or ground, oxidizes to the dioxide in moist air, but when each particle is surrounded with grease oxidation is prevented. Actually one can smell the sulphur dioxide when the powder is exposed; and that is one of the finest insecticides. Sulphur is the greatest and by far the most common of all insecticides. It is used for animals in tremendous quantities. It is used for trees, plants, and so on—also in great quantities. If the body and clothes are dusted with the powder, finely ground, the cure is simple and certain, at least in my experience. It is just as efficacious against lice and bed-bugs. When I get an infection myself I dust all clothes, blankets, bedding, etc., with it. For mattresses I use coir, which I dust freely, and place between folded sheet or rug, and fasten with safety-pins; then the dressing can be repeated as desired. Coir is good because it can be boiled and dried repeatedly. I have been infected many times abroad, but I never worry, for I never go without some sulphur. But whether it really is as excellent as I find it can only be known by repeated experiments carried out under proper medical supervision. It should be good to sprinkle in shelters, and for that work probably the solution in an alkaline salt would be best, sprayed. The sulphur is precipitated as a very fine powder. It is in this form that it is used so much for trees, plants, etc. The use of sulphur by mouth is a very old remedy. I think it is one used by the Assyrians or before them. The confection or the brimstone and treacle is also a most excellent laxative for anyone, especially children.

Varicose Ulceration

Dr. STUART MCAUSLAND (Liverpool) writes: It is probably the experience of others like myself who have large varicose vein and ulcer clinics that occasionally ulcers become reluctant to heal with the known methods of compression with sponge rubber and tight bandaging with "elastoplast." Recently I have found that such ulcers respond remarkably well if packed lightly with three or four layers of a dressing consisting of an open mesh gauze impregnated with petroleum jelly and balsam of Peru—the sponge rubber and elastoplast being then applied on the top of the dressings. In order to allow free discharge through the layers of the dressing, and in order to avoid disturbance of granulations on removal, it is essential that the gauze have an open mesh of about 2 mm., and that it be thoroughly impregnated with the petroleum jelly mass. This type of gauze is actually commercially prepared, being sold on the drug market under the name of "jelonet." I have used this preparation for some six months, and these indolent ulcers do fill up more rapidly as a result. It is, of course, important that an adequate amount of sponge rubber should be used. If there be much brawny thickening of the leg surrounding the ulcer it is a good plan to cut a small piece of the rubber to the size of the ulcer, and then to lay over it a very large piece of sponge rubber, which exerts pressure over the whole red, oedematous, and brawny area. The method also of bandaging is important. I am a great believer in the value of the "stirrup"—that is, a strip of elastoplast running down the side of the calf, under the arch of the foot, and up the other side of the calf, thus covering the sponge rubber over the ulcer, which is usually lateral. A back strip as well, terminating under the foot, is then applied. Then the whole lower leg from the toes upwards is firmly bandaged. The value of the back and side strips is that they prevent creasing of the skin by the upward horizontal bandaging, and thereby avoid much discomfort for the patient.